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Fertilizer Report

August 1 to December 31, 1916

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Chief Chemist

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LETTER OF TRANSMITTAL.

DEPARTMENT OF AGRICULTURE
BUREAU OF CHEMISTRY

Harrisburg, Pa., February 6, 1917.

Hon. Charles E. Patton,
Secretary of Agriculture,
Harrisburg, Pa.

Dear Sir:—I have the honor to transmit herewith for your approval a report of the work performed by this bureau, incident to the enforcement of the fertilizer law, showing the results of analyses of the samples of commercial fertilizers received from authorized sampling agents during the fall season of 1916.

It is recommended that this report be published in bulletin form for distribution.

Very respectfully,

JAMES W. KELLOGG,
Chief Chemist.

FERTILIZER REPORT

August 1 to December 31, 1916.

INTRODUCTION

During the period from August 1 to December 31, 1916, known as the Fall inspection season, 896 samples of various brands and kinds of fertilizers were received from authorized sampling agents representing the goods being sold and used throughout the State. These samples were carefully drawn, mixed, placed in suitable cartons and sealed, according to special and explicit directions, and forwarded to the chemical laboratory of the Department. Of this number 683 were selected and analyzed, representing those brands which were properly registered with the Department as being offered for sale. In cases where two or more samples representing like brands were received, to avoid duplication and unnecessary analyses a composite sample was prepared by weighing out equal portions of each sample, mixing these portions together, and after a reduction to the proper degree of fineness the composite samples were analyzed. In this manner there were 179 composite samples analyzed, the remaining samples being analyzed separately, each representing a single brand. In the table showing the results of analyses the composite samples are indicated by brackets, embracing the chemist's numbers of the samples thus united, the brand names being shown only once in such cases.

The samples received and analyzed were arranged according to their character into six groups or classes as follows: 296 Complete Fertilizers, furnishing nitrogen, phosphoric acid and potash; 240 Nitrogen and Phosphoric Acid fertilizers, including dissolved bone and other like products; 23 Ground Bone Fertilizers, furnishing nitrogen and phosphoric acid; 104 Acidulated Phosphate Fertilizers, furnishing phosphoric acid; 8 Rock and Potash Fertilizers, furnishing phosphoric acid and potash, and 12 Miscellaneous Fertilizers, including nitrate of soda, tankage, ground fish, meat and bone and pulverized phosphate rock.

The number of brands represented by these samples was 414 and the number of companies 79. Of the complete fertilizers there were 45 brands of different formulas. The 1-8-1 formula appeared to form the greater portion of those being sold in the State, as there were 60 samples of this grade analyzed. The next formulas in the order of the number of samples received were 1-8-2 with 21 samples, 2-9-1 with 20 samples, 1-10-1 with 19 samples, ½-8-1 and 2-8-1 with 17 samples each, 1-7-1 with 16 samples, and the remaining grades included from 1 to 12 samples each.

The sampling agents reported no cases where sacks or attached cards showed the presence or use of leather, hair, hoofs, horns or wool waste in any form as is required to be shown on sacks or attached cards by section 4 of the fertilizer law, when these products are pulverized, ground, steamed or cooked and used as an ingredient in a fertilizer. The samples representing each brand secured were examined microscopically for the presence of the foregoing materials and, with one exception, were not found present except in accidental traces. The exception referred to was a brand which contained a very small amount or trace of wool waste, which probably had escaped complete acidulation in the process of rendering the nitrogen available in this class of products. In this brand, according to the analysis of the two samples included, the greater portion of the nitrogen found was available.

The fertilizer law of April 23d, 1909, requires that where the word "bone" is used in connection with or as a part of the brand name of any fertilizer the phosphoric acid contained therein shall be from the product of pure animal bone. In those samples where the word "bone" occurred as a part of the brand name they were examined to determine whether or not this requirement was fulfilled. In such cases no violations were found to exist.

All of the samples included in this report were analyzed for moisture and for nitrogen, phosphoric acid and potash, where these plant foods were guaranteed, for the purpose of determining whether or not the guarantees claimed would be sustained. In arriving at the amount of plant food contained in a complete fertilizer the following determinations are made:

Moisture:—Which indicates whether the fertilizer is in proper condition for use, the manner in which it has been stored or transported, whether or not the consumer is buying more water than should be normally present in such products and as a check on the results of analyses.

Nitrogen:—This element especially affects the leaf or foliage growth of the plant. It is frequently spoken of and guaranteed as ammonia. Determinations are made for total nitrogen, which includes all that may be present in any form, the water insoluble nitrogen and that portion of the water insoluble nitrogen, which is active, and which is said to be made use of by the plant. The amount of water insoluble nitrogen which is inactive, deducted from the total nitrogen, shows the so-called available nitrogen, which includes that portion of the nitrogen in the fertilizer which is soluble in water and the portion of the insoluble nitrogen which is active. The available nitrogen is in such forms as can be readily made use of by the growing plant. The nitrogen soluble in water includes that supplied in the form of nitrates and ammonia salts, a small amount of organic nitrogen and a greater portion of any that may be present as calcium cynanamid. The amount of active insoluble nitrogen is determined by treating the water insoluble nitrogen or a portion of the fertilizer left after extraction with water with alkaline potassium permanganate. This determination shows what portion of the insoluble nitrogen is active, and these proportions are indicated in the tables in the columns showing these percentages by prefixing the letters "a," "b" and "c" to the same, which in the case of "a" indicates that 3-5 or 60% of the water insoluble nitrogen is active, "b" from 2-5 to 3-5 or from 40 to 60% is active, and "c" indicates that 2-5 or 40% or less of this form of nitrogen is active. Some states use the terms "good," "doubtful" and "poor" to indicate these respective classes or grades of nitrogen. This information is of value in determining whether the insoluble nitrogen is derived from high grade materials such as blood meal and tankage, or low grade materials such as garbage tankage, peat, mora meal, leather, wool waste, hair, etc. In cases where the insoluble nitrogen was only .2 per cent. or less the determinations for active insoluble nitrogen were not made. In those samples where this form of nitrogen was determined, which included the complete and nitrogen and phosphoric acid fertilizers, the average guarantee for total nitrogen was 1.20 per cent. and the average found was 1.36 per cent. The available nitrogen averaged 1.00 per cent. The results of analyses for active insoluble nitrogen in all those samples where this form was determined shows that 17 per cent. were in class "a," 62.6 per cent. in class "b" and 20.4 per cent. in class "c."

Phosphoric acid influences the fruiting and production of seed, and samples are analyzed for total phosphoric acid and insoluble phosphoric acid, from which is determined the amount of phosphoric acid which is available or readily made use of by the plant. As the law requires the amount of available phosphoric acid to be guaranteed it is this form of plant food which is usually referred to in speaking of the composition of fertilizers with respect to this constituent. The available phosphoric acid includes that which is soluble in water and the so-called reverted phosphoric acid which is acted upon by a neutral solution of ammonium citrate, which is similar in action to the solution of the soil. The insoluble phosphoric acid in that portion which is not readily available as a plant food.

Potash:—This element has especially to do with the formation of the carbohydrates substances, such as starch, sugars, cellulose, etc. In the analyses of fertilizers the potash is determined by extracting it from a portion of the sample with distilled water, and, being soluble in water, is therefore readily available and absorbed by the plants. Potash is usually supplied in the form of muriate or sulphate of potash and to determine in which form it is present a determination for chlorine is made from which the proportion of potash as muriate or sulphate can be estimated.

In the case of ground bone, in addition to making determinations for total nitrogen and phosphoric acid, the degree of fineness is also determined by sieving. That proportion which passes a sieve having holes 1-50 of an inch in diameter is estimated as "fine" and that not passing such sieve is classed as "coarse."

The tables showing the results of analysis, which follow, have been arranged so that the six grades or classes of fertilizers are grouped together for comparison. The columns showing the results of analyses in these tables have been arranged in the following order from left to right: Chemists number, manufacturers and brand names, names of dealers and addresses, moisture, total nitrogen found and guaranteed, available nitrogen, water soluble nitrogen, active insoluble nitrogen, inactive insoluble nitrogen, total phosphoric acid found and guaranteed, available phosphoric acid found and guaranteed, insoluble phosphoric acid, total potash found and guaranteed and selling price. In cases where the potash is in whole or part as sulphate this fact is indicated by a footnote at the bottom of each page. Deficiencies are indicated by an asterisk (*), and only those are noted in the total nitrogen, available phosphoric acid and total potash where the determinations fell .2 per cent. or more below the guarantees. Where the percentages of nitrogen and potash were guaranteed as low as .50 per cent. the deficiencies noted are only where they were .1 per cent. or more below these guarantees.

The guarantees included in the registrations, on file with the department, have been compared with the information furnished by the sampling agents and are the ones used in this report. In many cases the guarantees are given for ammonia instead of nitrogen, and in such cases the guarantee for nitrogen has been arrived at by use of the factor .8225. To convert nitrogen to ammonia the factor used is 1.2158. The sum of the guarantees for water soluble and reverted phosphoric acid gives those for "available."

ACKNOWLEDGEMENTS.

Acknowledgement is herewith made and many thanks extended to those of the bureau staff who have accomplished the season's work which was performed as follows:

Mr. V. B. Hausknecht had charge of the reception and preparation of samples and supervision of the details of the analytical work. The nitrogen determinations were made by V. B. Hausknecht, J. E. Shull and William Weber. Determinations for insoluble phosphoric acid by F. J. Holben, total phosphoric acid by A. B. Long, potash and chlorine by G. J. Kuhlman, the microscopical examinations by H. E. Gensler and the preparation of samples and determination of moisture by P. H. Fairlamb. The clerical work incident to the preparation of this report was performed by W. E. Huber and Misses Frances Sawyer and Ruth I. Mentzer.

Thanks are also extended to Hon. Charles E. Patton, Secretary of Agriculture, and G. G. Hutchison, General Agent, for advice and help in connection with administrative duties; to Mr. H. E. Klugh, clerk, for co-operation in furnishing data with respect to registrations and selection of samples and to the field agents who secured the samples for analyses.

The method of classifying samples and furnishing other information as used by Dr. William Frear, Vice Director and Chemist of the Experiment Station in the publication of former Fertilizer Bulletins, has been adhered to in preparing this report, and these bulletins have been freely consulted.

FERTILIZER LAWS

For the purpose of having the requirements of the fertilizer laws at hand for ready reference, the act of May 1st, 1909, commonly referred to as the "New Fertilizer Law," and also the act of April 23d, 1909, regulating the use of the word "bone" in brand names, are included, as is the usual custom, as follows:

THE ACT OF 1ST MAY 1909, COMMONLY REFERRED TO AS "THE NEW FERTILIZER LAW"

No. 205.

AN ACT

To regulate the manufacture and sale of commercial fertilizers; prescribing penalties for its violation, and repealing an act, entitled "An act to regulate the manufacture and sale of commercial fertilizers; providing for its enforcement, and prescribing penalties for its violation," approved the twenty-fifth day of March, Anno Domini one thousand nine hundred and one.

Section 1. Be it enacted, &c., That every package of commercial fertilizer sold, offered, or exposed for sale, for manurial purposes within this Commonwealth, except the dung of domestic animals, lime, marl, and wood-ashes, shall have plainly stamped thereon the name and address of the manufacturer or importer and his place of business, the net weight of the contents of the package, the brand or trade-name of the fertilizer the package contains, and an analysis stating the percentage such fertilizer contains of nitrogen in an available form, of potash soluble in water, of soluble and reverted phosphoric acid, and of insoluble phosphoric acid.

Section 2. Every manufacturer or importer of commercial fertilizers, as specified in section one of this act, shall, on or before the first day of January of each year, or before offering them for sale in this Commonwealth, file annually with the Secretary of Agriculture a statement of the names and number of brands of such commercial fertilizers, having distinct trade-names, that he shall offer for sale during the next ensuing year, and a copy of the analysis of each one of such brands of commercial fertilizers, as required by section one of this act.

Section 3. In addition to the statement required by section two of this act, every manufacturer or importer of commercial fertilizers shall, on or before the first day of January of each year, or before offering them for sale in this Commonwealth, file annually with the Secretary of Agriculture an affidavit showing the amount of each brand of fertilizer, having a distinct trade-name, sold within the Commonwealth during the last preceding year; and if the said amount shall be one hundred tons or less, he or they shall pay or cause to be paid to the Secretary of Agriculture the sum of fifteen dollars for each and every brand of such commercial fertilizer, having a distinct trade-name, sold within the State during the last preceding year; and if the said amount shall exceed one hundred tons, and be less than five hundred tons, he or they shall pay the sum of twenty dollars, as aforesaid; and if the said amount shall be five hundred tons or more, he or they shall pay the sum of thirty dollars, as aforesaid. If such manufacturer or manufacturers, importer or importers, shall not have made any sales within the Commonwealth during the preceding year, he or they shall pay the sum of fifteen dollars upon each such brand, as aforesaid: Provided, That all monies so received shall be immediately paid by the Secretary of Agriculture into the State Treasury, for the use of the Commonwealth.

Section 4. No person shall sell, offer, or expose for sale, in this State, any pulverized leather, hair, ground hoofs, horns, or wool waste, raw, steamed, roasted, or in any form, as a fertilizer, or as an ingredient of a fertilizer or manure, without an explicit statement of the fact; said statement to be conspicuously affixed to every package of such fertilizer or manure, and to accompany and go with every lot, parcel, or package of the same.

Section 5. Any person or persons selling, offering, or exposing for sale, any commercial fertilizer or any brand of the same, having a distinct trade-name, without the analysis required by section one of this act, or with an analysis stating that it contains a larger percentage of any one or more of the above-named constituents than is contained therein, or for the sale of which all the provisions of sections two and three have not been complied with, or any person violating any of the provisions of section four of this act, shall be guilty of a misdemeanor, and, on conviction, shall be sentenced to pay a fine of not less than twenty-five nor more than one hundred dollars for the first offense, and not less than two hundred dollars for each subsequent offense. It shall be the duty of the Secretary of Agriculture to enforce the provisions of this act, and all penalties, costs, and fines recovered shall be paid to him or his duly authorized agent, and by him shall be immediately paid into the State Treasury, for the use of the Commonwealth.

Section 6. The Secretary of Agriculture is hereby empowered to collect samples of commercial fertilizers, either in person or by his duly qualified agent or representative, and to have them analyzed, and to publish the results for the information of the public; and for this purpose the said Secretary of Agriculture, such assistants, agents, experts, chemists, detectives, and counsel as he shall duly authorize, shall have full access, ingress, and egress to and from all places of business, factories, barns, buildings, carriages, cars, and vessels, used in the manufacture and transportation, or sale, of any commercial fertilizer. They shall also have power to open any package or vessel containing or supposed to contain any commercial fertilizer, and take therefrom samples for analysis, upon tendering the value of said samples.

Section 7. The term "commercial fertilizers," as used in this act, shall be construed to mean any and every substance imported, manufactured, prepared, or sold for fertilizing or manuring purposes, except the dung of domestic animals, marl, lime, and wood-ashes, and not exempt by the provisions of section one of this act.

Section 8. This act shall go into effect on and after the thirty-first day of July, one thousand nine hundred and nine; and the act entitled "An act to regulate the manufacture and sale of commercial fertilizers; providing for its enforcement, and prescribing penalties for its violation," approved the twenty-fifth day of March, Anno Domini one thousand nine hundred and one, is hereby repealed.

Approved—The 1st day of May, A. D. 1909.

EDWIN S. STUART.

No. 95.

AN ACT

Making it unlawful for any person, firm, or corporation, engaged in the manufacture or sale of commercial fertilizers, to use the word "bone" in connection with, or as part of the name of, any fertilizer, or any brand of the same, unless the phosphoric acid contained in such fertilizer shall be the product of pure animal bone; and providing a penalty for violation of the same.

Section 1. Be it enacted, &c., That it shall be unlawful for any person, firm, or corporation, engaged in the manufacture or sale of commercial fertilizers, to use the word "bone" in connection with, or as part of the name of, any fertilizer, or any brand of the same, unless the phosphoric acid contained in such fertilizer shall be the product of pure animal bone.

Section 2. Any person or persons violating the provisions of this act shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall pay a fine of fifty dollars for the first offense, and a fine of not less than one hundred dollars, nor more than two hundred dollars, for every subsequent offense; such fine or fines to be paid into the State Treasury, for the use of the Commonwealth. The Secretary of Agriculture shall, together with his deputies, agents, and assistants, be charged with the enforcement of this act.

Section 3. All magistrates, aldermen, and justices of the peace throughout this Commonwealth shall have jurisdiction to hear and determine actions arising from violations of the provisions of this act, and shall have authority to hold for court, or to impose the penalty hereby prescribed, subject to appeal, as the law shall direct.

Section 4. This act shall go into effect on the first day of January, Anno Domini nineteen hundred and ten.

Approved—The 23d day of April, A. D. 1909.

EDWIN S. STUART.

DISCUSSION OF RESULTS OF INSPECTION

The samples analyzed during the Fall season covered by this report and classified as previously noted represented 414 separate brands and included 79 different manufacturing firms. The greatest number of samples were those of the complete fertilizers, the next in order being the nitrogen and phosphoric acid products, including the dissolved bones and products similar in composition. This latter class of fertilizers has increased in proportion to the complete fertilizers, no doubt largely due to the shortage of potash as compared with the number of samples of these classes of goods received during the corresponding Fall season of last year. During 1915 the proportion of dissolved bones to complete fertilizers was as 1:7, while the ratio of the present season is as 1:2. The complete fertilizers show a considerable variety in their formula, composition and price. Of the total number of samples analyzed there were 545 in which determinations were made for the available nitrogen and that portion of the insoluble nitrogen, which is active. Of this number 93 or 17.0 per cent. were in class "a," 341 or 62.6 per cent. were in class "b" and 111 or 20.4 per cent. were in class "c."

COMPLETE FERTILIZERS

The number of samples of complete fertilizers were 296, representing 54 companies and 185 brands. There were 45 different formulas, the predominating one being of the grade 1-8-1, of which there were 60 samples. The next grade in order of the number of samples analyzed was 1-8-2 with 21 samples. There were 20 samples of 2-9-1, 19 samples of 1-10-1, 17 samples each of ½-8-1 and 2-8-2, and the number of samples of the remaining formulas was less in number, ranging from 1 to 12. The lowest nitrogen noted was .40 per cent., highest 3.75 per cent., average 1.29 per cent., average guarantee 1.11 per cent., average available nitrogen .93 per cent. The lowest available phosphoric acid 5.67 per cent., highest 11.94 per cent., average 9.07 per cent. The lowest potash .47 per cent., highest 3.47 per cent., average 1.32 per cent. The prices ranged from $17 to $40 per ton, with an average of $24.97. More than one half, 174 samples, or 58.8 per cent., contained a good grade of insoluble nitrogen, the active portion of which was in class "b." Fifty samples or 16.9 per cent. were in class "a" and 72 samples or 24.3 per cent. were in class "c." Nearly all the guarantees for potash were low, a greater portion of them not exceeding 1 per cent., there being 52 samples where the potash was guaranteed to contain 2 per cent. and 3 per cent. For the purpose of making a comparison of the average composition and retail prices of the various brands of goods having a similar formula the following table has been prepared furnishing this information, showing the formula, the number of samples of each and the average analyses and prices. The percentage of nitrogen shown should be multiplied by the factor 1.2158, in order to convert it to ammonia to compare with the first figure of the formula:

Formula.	Number of samples.	Nitrogen.	Phosphoric acid.	Potash.	Prices.
		Per ct.	Per ct.	Per ct.	
¼—9—¼,	1	.40	9.66	.94	$18 00
½—7—¼,	2	.55	9.23	.54	17 25
½—7—½,	3	.60	7.68	.72	18 00
½—7—1,	2	.86	8.01	1.17	21 00
½—8—½,	2	.72	8.67	.68	19 00
½—8—1,	17	.61	9.11	1.18	20 77
½—8—2,	4	.79	9.38	1.84	23 84
1—6—2,	3	.99	6.46	1.85	26 42
1—7—¼,	2	1.21	8.22	.58	20 00
1—7—½,	2	.91	7.14	.72	21 00
1—7—1,	16	1.13	7.77	1.08	23 34
1—8—¼,	1	.94	8.27	.47	19 00
1—8—½,	5	1.48	8.39	.86	20 73
1—8—1,	60	1.04	8.64	1.12	23 02
1—8—2,	21	1.04	8.85	2.08	25 71
1—9—1,	10	.99	9.70	1.09	22 62
1—9—2,	3	1.08	9.27	2.24	25 94
1—9—3,	3	1.08	9.78	3.47	29 37
1—10—1,	19	1.10	10.59	1.23	24 02
1—12—1,	1	1.04	11.43	1.53	24 00
1¼—8—½,	1	1.02	8.09	.74	22 00
1¼—8—¾,	3	1.18	7.91	.83	24 25
1¼—8—1,	2	1.54	9.57	.93	23 00
1¼—8—2,	1	1.31	8.07	2.01	26 50
1¼—9—½,	2	1.18	10.22	.56	......
1½—8—1,	4	1.39	9.04	1.13	24 00
1½—10—1,	11	1.35	10.93	1.15	27 03
1¾—7—1,	3	1.73	7.90	1.08	26 83
1¾—7—2,	2	1.56	8.98	1.70	26 05
1¾—8—½,	1	1.65	7.30	.66	21 00
1¾—9—1,	2	1.66	8.22	.89	28 75
2—6—2,	1	2.01	7.81	.97	29 50
2—7—1,	2	1.62	7.04	1.08	24 00
2—8—1,	7	1.64	8.61	1.21	26 88
2—8—2,	17	1.74	8.75	2.12	29 34
2—8—3,	3	1.69	8.35	3.25	31 42
2—8½—1,	5	1.72	9.33	1.37	25 27
2—9—1,	20	1.76	9.73	1.26	26 02
2—10—½,	1	1.68	9.61	.80	22 80
2—10—1,	12	1.71	10.69	1.23	28 19
2½—8—1,	10	2.08	9.29	1.03	29 40
2½—10—1,	2	2.13	11.09	1.23	31 50
3—9—1,	5	2.32	10.19	1.19	32 30
4½—8—1,	1	3.75	8.74	1.11	40 00
5—8—1,	1	3.65	9.01	1.74	34 00
Total Average,	.....	1.29	9.07	1.32	$24 97

A considerable variation in the prices charged will be noted, however; there is a gradual increase as the amount of plant food contained therein increases. In cases where only one or two samples are shown the prices for these grades of goods cannot be said to be as representative as are the prices where a greater number of samples are included in the averages. In the case of the samples having the formula 1-8-1, where 60 samples are included, it will be of interest to note the variations in this class from which the average results were secured. Twelve different brands of this grade of goods were produced by the same company, the prices ranging from $21.00 to $28.00 per ton. Of course, the freight rate and other incidentals would allow for some of the $7 difference in the prices charged for this grade of goods, and possibly the sources of nitrogen, phosphoric acid and potash would, in a measure, also explain a portion of the differences charged. The variations noted in the 60 samples having the 1-8-1 formulas were as follows: Lowest nitrogen .87 per cent., highest 2.46 per cent., average 1.04 per cent.; lowest available phosphoric acid 7.47 per cent., highest 10.41 per cent., average 8.64 per cent.; lowest potash .75 per cent., highest 1.52 per cent., average 1.12 per cent. The lowest price $20, highest $30, average $23.02. It will be also noted that the average analysis of these 60 samples of 1-8-1 brands was close to the guarantees claimed. The range of $10.00 in price for the same class of goods is of especial interest.

In the case of the 21 samples having the formula 1-8-2, 9 brands were represented and the minimum and maximum retail prices were $21.00 and $29.25 per ton, respectively, thus giving a difference in this case of $8.25. The variations in the single analyses were not great and the averages are shown in the foregoing table. Of the 20 samples of 2-9-1 fertilizers, representing 15 brands, the average analysis of which is also indicated above, the prices ranged from $21.00 to $29.25 per ton. The 1-10-1 formula goods were represented by 19 samples, 14 brands, 8 of which were manufactured by one company, the average analysis of which corresponded closely with the guarantees. Of the 8 samples of one company's goods the price varied from $22.50 to $25.50 per ton and of the total number in this class the selling price ranged from $22.00 to $26.00 per ton. Similarly in the $\frac{1}{2}$-8-1 formula goods the prices varied from $19.00 to $24.00 per ton, where 17 samples and 8 brands were represented. As a rule the analyses of the samples in any one similar formula brands showed no excessive variation, whereas the prices secured do show considerable variation, and this information is included for the purpose of indicating that it behooves the purchaser to first decide what particular formula goods he wants rather than any brand name and then purchase the same for the lowest price quoted.

Referring again to the 60 samples of the 1-8-1 grade of fertilizers, even though they were all supposed to analyze the same, it happens that the one running the highest in nitrogen and close to the guarantees in phosphoric acid and potash was sold for $25.00 per ton, while there were 8 samples representing 1-8-1 goods which ran close to their guarantees and not as high in nitrogen, thus containing less plant food than in the cases cited which were quoted as selling from $25 to $30, the highest price. In those cases of other formula grades where 10 to 15 samples were received similar variations in prices occur, while the analyses remain fairly constant.

The deficiencies noted among the complete fertilizers were 7 cases in which nitrogen was deficient; 18 available phosphoric acid and 8 in potash. The results of analyses will be found in table No. 1.

NITROGEN AND PHOSPHORIC ACID FERTILIZERS

In this class of goods which were grouped the dissolved bones and other like materials there were 240 samples, 57 companies and 133 brands being represented. The variations noted in the analyses, excluding one sample, were as follows: Total nitrogen, lowest .42 per cent., highest 3.26 per cent., average 1.45 per cent., average guarantee 1.31 per cent., average available nitrogen 1.07 per cent.; lowest available phosphoric acid 5.11 per cent., highest 14.71 per cent., average 10.11 per cent. As the ratio of nitrogen to phosphoric acid in pure animal bone is approximately 1 to 8, these samples may be said to fall in the group of dissolved bone as classified. The one sample referred to as being excluded from the average contained 6.63 per cent. total nitrogen and 8.98 per cent. total phosphoric acid. A greater portion of the nitrogen, 6.35 per cent., was available and water soluble, as will be noted, and consisted in part of nitrates, thus taking it out of the dissolved bone class, although because of the fact it contained no potash it was included in this group. The selling price varied from $15 to $34 per ton, with an average of $21.79, the highest price noted in this group being $43.25 for the brand already referred to and excluded from the average. There were 35 samples or 14.6 per cent. which fell in class "a" with respect to their active insoluble nitrogen; 166 samples or 69.2 per cent. in class "b" and 39 samples or 16.3 per cent. in class "c." These figures indicate to what extent the products have been acidulated and the nitrogen present thus being made available. The variation in price noted in this class of goods from $15 to $34 per ton, amounting to a difference of $19, is considerable when one considers the fact that he is supposed to receive a fertilizer furnishing a formula of approximately 1¾-10-0, which is indicated by the average analysis secured. The sample in which the lowest price of $15 was received analyzed .88 per cent. nitrogen and 7.23 per cent. available phosphoric acid, being the same brand with the same composition as two other samples included in the composite analysis which represented shipments selling for $17.50 and $21.00. The highest price of $34.00 represented a sample of bone and tankage analyzing 2.06 per cent. total nitrogen and 9.15 per cent. available phosphoric acid. The difference of $19 between the highest and lowest selling prices represented an increase in the analysis of the samples sold for $15 of 1.14 per cent. nitrogen and 1.90 per cent. phosphoric acid, or nearly twice as great a charge for goods containing considerably less than twice the amount of plant food, as in the former case. By referring to Table II., showing the individual analyses, similar variations, although less in extent, will be noted.

GROUND BONE FERTILIZERS

The number of samples of ground bone was 23, representing the product of 16 companies and 17 brands. The average analysis was 2.94 per cent. total nitrogen; 23.11 per cent. total phosphoric acid and the average selling price was $37.45. The variations noted were as follows: Lowest nitrogen 2.51 per cent., highest 4.14 per cent.; lowest total phosphoric acid 13.70 per cent., highest 28.05 per cent. The average degrees of fineness, or that portion of the bone which passed a 1-50th of an inch sieve, as determined by the usual method and classed as "fine," was 64.04 per cent., and that portion determined as "coarse" was 35.96 per cent. The selling price ranged from $33 to $50 per ton. The brand of bone represented by the low selling price, as compared with that with the highest selling price analyzed about the same in nitrogen, 10.79 per cent. less in phosphoric acid and showed a greater degree of fineness. The results of analysis will be found in Table No. III.

ACIDULATED PHOSPHATE FERTILIZERS

There were 104 samples classified in this group, the number of companies represented being 41 and the number of brands 61. The analysis of these samples did not show a marked variation from their guarantees, there being only six deficiencies noted. The lowest percentage of available phosphoric acid was 10.96 per cent., the highest 17.80 per cent., with an average of 15.28 per cent. The lowest selling price was $14, the highest $28, with an average of $18.46 per ton. The guarantees for available phosphoric acid were, with a few exceptions, 14 per cent. and 16 per cent., and as a rule these guarantees were exceeded. There was considerable variation in some of the prices noted where one company's brands were represented by two or three samples. Those showing the widest variations in this respect amounted to $3, $4, $5, and $6. The results of analyses will be found in Table No. IV.

ROCK AND POTASH FERTILIZERS

There were only eight samples of fertilizers which were placed in this group furnishing phosphoric acid and potash, the sources of which being usually supplied by rock phosphate and potash salts. Four companies and five brands were represented, and the variations in analyses which occurred were as follows: Lowest available phosphoric acid 3.55 per cent., highest 10.97 per cent., average 9.38 per cent. The average insoluble acid was low, amounting to .98 per cent. The potash ranged from .21 per cent. to 2.29 per cent., with an average of 1.60 per cent. The prices ranged from $17.50 to $25.00, with an average of $21.62 per ton. The results of analyses will be found in Table No. V.

MISCELLANEOUS FERTILIZERS

In this group were placed the 12 samples which could not be properly classified in the foregoing groups and consisted of nitrate of soda, tankage, ground fish, meat and bone and pulverized phosphate rock. There were nine companies represented by these products. The average content of nitrogen in the three samples of nitrate of soda was 16.27 per cent., and the average price was $72.97. There were five samples of tankage which had the following average composition: Total nitrogen 6.79 per cent., total phosphoric acid 11 per cent. In one case no phosphoric acid was claimed, only .11 per cent. being found which was not included in the average. The prices showed considerable variation in case of the samples of tankage, ranging from $17.50 to $37.00, with an average of $30.47 per ton. The brand for which the selling price was $17.50 per ton contained practically the same amount of nitrogen and only .34 per cent. less phosphoric acid than that for which $37.00 per ton was charged, showing a range of $19.50 in the price for these goods. The detailed analysis of these samples, together with the remaining ones of Tennessee brown phosphate rock, animal bone and meat, ground fish, blood and tankage mixture, will be found in Table No. VI.

DEFICIENCIES

The number of cases observed in the samples examined this season where nitrogen, phosphoric acid and potash failed to meet the guarantees claimed was less than the number noted in the samples received during previous seasons. The "overages" have greatly exceeded the "deficiencies," indicating that the manufacturers as a rule have furnished the amount of plant food which they guaranteed to give in those brands of fertilizers represented by the samples included in this report. The deficiencies which occurred are indicated in the tables showing the detailed analyses by an asterisk (*) prefixed to the percentages of total nitrogen, available phosphoric acid and potash, and in the cases of total phosphoric acid where the available form was not determined. Only those cases are indicated in this manner where the percentages found were .2 per cent. or more below their guarantees and in samples in which the guarantees for nitrogen and potash were .50 per cent. or less the deficiencies shown are those where variations occurred of .1 per cent. or more below such guarantees.

Of the 570 samples guaranteed for nitrogen there were only 12 or 2.1 per cent. deficient. There were 648 samples guaranteed for available phosphoric acid, and 37 or 5.7 per cent. of these contained less than expected. The number of samples analyzed for total phosphoric acid where the available form was not claimed, including ground bones and a few miscellaneous samples was 31, and 3 or 9.7 per cent. of these were deficient. Those samples containing potash, including the complete and rock and potash fertilizers, numbered 304, and 9 or 3 per cent. were deficient in this constituent. In order that the deficiencies in the several groups may be more readily observed the following table has been prepared:

Classes of Fertilizers.	Number of samples.	Deficient in nitrogen.	Deficient in available phosphoric acid.	Deficient in potash.
Complete fertilizers,	296	7	18	8
Nitrogen and phosphoric acid fertilizers,	240	3	12	......
Ground bone fertilizers,	23	2	*2	......
Acidulated phosphate fertilizers,	104	......	6	......
Rock and potash fertilizers,	8	......	1	1
Miscellaneous fertilizers,	12	......	*1	......

*Total phosphoric acid.

AVERAGE ANALYSES AND RETAIL PRICES

For the purpose of comparing the average composition of the five groups of fertilizers, excluding the miscellaneous samples, the following table has been prepared, showing the average analyses and retail prices:

	Complete fertilizer.	Nitrogen and phosphoric acid fertilizers, (dissolved bones, etc.)	Ground bone fertilizers.	Acidulated phosphate fertilizers.	Rock and potash fertilizers.
Number of samples,	296	240	23	104	8
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Moisture,	6.58	5.31	4.75	4.37	5.27
Total nitrogen,	1.29	1.45	2.94	....	....
Available nitrogen,	0.93	1.07	....	....	....
Total phosphoric acid,	10.56	12.00	23.11	15.99	11.11
Available phosphoric acid,	9.07	10.11	....	15.28	9.38
Insoluble phosphoric acid,	1.49	1.62	....	0.71	0.98
Potash,	1.32	....	....	....	1.60
Mechanical analysis of bone:					
Fine,	....	....	64.04	....	....
Coarse,	....	....	35.96	....	....
Selling price,	$24 97	$21 79	$37 45	$18 46	$21 62

Compared with the average figures observed for the Spring season and the preceding Fall season of 1915 there are no marked differences in the composition of the various groups except in the rock and potash fertilizers which in the Spring season contained much less phosphoric acid and potash. In this group of fertilizers, however, the comparison is not fair, as only one brand is represented as against five included in this report. The average selling prices show considerable variation. In the complete fertilizers the average selling price was about $3 less than for the Spring season and $3 in excess of that for the preceding Fall season. The nitrogen and phosphoric acid fertilizers averaged about $1.75 less and 30 cents in excess of the prices during these respective periods. The prices for ground bone and rock and potash goods are higher this season, while the acid phosphate prices remained fairly constant.

FERTILIZER VALUATIONS

The schedule of prices which in the past have been used to arrive at the valuation of fertilizers was based upon the wholesale prices of fertilizer products as shown by market quotations prevailing during the contract seasons preceding the years during which the inspection work was to be completed. The unit values were established from this information by the officials of various States having charge of the enforcement of the fertilizer laws. At a general conference of officials held in March, 1916, because of the European situation, the unsettled condition of prices and the lack of reliable quotations it was deemed unwise and impracticable to attempt to adopt any schedule of prices for the year. Because of this situation, therefore, and for the reason that it was believed such information would be incorrect and misleading the valuation of the several individual brands of fertilizers included in this report has not been made.

In attempting to give a value for any brand of fertilizer for comparison with the retail or selling price several factors enter in which cannot be accurately known to the officials, such as cost of materials to manufacturers which vary when purchased in large or small amounts, efficiency of production where the cost of manufacturing above the cost of materials will also vary, and the variation in the costs of transportation. Freight rates may be fairly uniform and close to $2.00, the amount of charge heretofore used in valuations, along a main line and within a certain radius, or they may vary considerably from this amount because of long hauls or transportations over roads supplying remote centres and districts where additional transfers are necessary. Many valuations have been made where the estimated price was slightly less than the selling price, making it appear that the purchaser was being overcharged in such cases, whereas if the freight rate of $3.36 from Norfolk to Lancaster were used, instead of that of $1.84 from Baltimore to Lancaster, the difference of $1.52 would make the valuation exceed the selling price, and thus it would appear that the consumer was getting excess value.

Referring to previous reports where computed commercial values and selling prices are shown, it has frequently occurred that two or three selling prices are given for a certain brand for which the computed value is shown to be less than the higher and greater than the lower selling prices furnished by official agents. These differences may also be covered by the difference in freight charges and other factors. As previously shown, in the 60 samples of the brands of 1-8-1 goods considerable variation was noted in the selling price, which ranged from $20 to $30 per ton for a grade of fertilizer supposed to contain exactly the same amount of plant food. As a matter of fact, the difference of $10 per ton between these two brands of fertilizers was not justified by the difference in the analysis, which was as follows: The $20 goods analyzed .89 per cent. nitrogen, 8.88 per cent. available phosphoric acid, 1.29 per cent. potash, while the $30 goods analyzed as follows: 1.13 per cent. nitrogen, 8.42 per cent. available phosphoric acid, 1.45 per cent. potash. The average selling price of these brands of 1-8-1 goods was $23.02 per ton, and between this amount and the highest charge of $30 there were 18 cases which exceeded the average and several which were around $27. As further illustration of these variations, there were 12 different brands of 1-8-1 fertilizers reported as being manufactured by the same firm which ranged in selling price from $21 to $28, making $7 difference for a grade of goods which was supposed to contain exactly the same amount of plant food.

During the nine seasons of fertilizer inspection, from 1911 to the Fall season of 1915, as shown in Bulletin No. 277, the valuations for complete fertilizers exceed the selling prices from 61 cents to $2.95, or an excess of from 2.8 per cent. to 11.6 per cent. of the selling price, the latter case being more than one-half of the agent's commission of 20 per cent. usually used in such computations. In the case of the remaining groups or classes of fertilizers the valuations are less than and exceed the reported selling prices in about equal proportions. If we were to value a fertilizer containing potash at the present rate of price for potash salts, the approximated valuation would exceed the present selling price to a greater extent than the cases cited.

The report of the Federal Trade Commission on the fertilizer industry of the United States shows that during the years 1910 to 1914 inclusive, four of the largest fertilizer companies produced approximately from two and one-half million to over three million tons annually and that the profits from the operation of the fertilizer business, based on the foregoing amount sold, ranged from $1.51 to $3.15 per ton. The foregoing valuations referred to, especially in the case of complete fertilizers, show that the selling prices were less than the commercial valuations, while the figures from the Federal Trade Commission report indicate that there was a profit in the business. While these profits do not appear as excessive as one might suppose, they indicate, where averages are being considered, the approximate amount to be deducted from the selling prices to arrive at valuations.

These illustrations will in a measure indicate how difficult it is for the officials to arrive at any commercial valuations based upon analyses and market quotations which would be accurate or which would be fair either to the consumer or to the producer. Because of these conditions and other variable factors many officials have felt that valuations are unreliable, for from being accurate and therefore misleading and should not be published in fertilizer reports.

MATERIALS USED IN FERTILIZERS

In the manufacture or preparation of the several grades or classes of fertilizers it is necessary to make use of the natural or manufactured products which supply the essential plant foods, nitrogen, phosphoric acid and potash, and by mixing them together or by processing place these products on the market in such forms as can be easily handled and utilized to the best advantage.

Complete fertilizers are usually mixtures of products supplying nitrogen, phosphoric acid and potash and a "filler." The products furnishing nitrogen include nitrate of soda, sulphate of ammonia, cyanamid, dried blood, tankage, fish scrap, cotton seed meal, castor pumace and natural guanos, which are classed as high grade materials. Other products furnishing nitrogen include garbage tankage, humus, peat, mora meal and untreated hair, hoof, horn, leather and wool waste. Raw bone and dissolved bone also furnish nitrogen but supply a greater amount of phosphoric acid. Phosphoric acid is supplied principally by acid phosphate, which is the pulverized natural deposit of phosphate rock treated with sulphuric acid in such a manner as to make most of the phosphoric acid readily available. Basic slag is also used as a source of this constituent. Potash is supplied for the most part by the water soluble salts imported from Europe, muriate of potash, sulphate of potash and kainit. Potassium nitrate and potassium carbonate are used to some extent, also wood ashes, the ashes of kelp, a form of weed seeds, cottonseed meal and tobacco stems supply this plant food. Recently flue dust, containing considerable potash secured as a by-product from blast furnaces, is being utilized. A product known as "base" goods also forms a part of the mixture of a complete fertilizer and is prepared by treating pulverized phosphate rock and organic materials, in which the nitrogen is in unavailable forms, with sulphuric acid, thus making both the nitrogen in such goods and the phosphoric acid in the rock available.

In preparing a ton of mixed fertilizer having a certain formula, as 1-8-2, the proper proportions of the foregoing materials, as, for example, tankage, acid phosphate and muriate of potash, are mixed together, and usually a product to make up the ton weight known as a "filler" is added. When using high grade materials for a ton mixture the number of pounds required to supply 1% of nitrogen, 8% of phosphoric acid and 2% of potash for the foregoing formula will not equal 2,000 pounds, and therefore it is necessary to make up this difference by using such materials as humus, peat, ashes, sand or any other form of material which will act as an absorbent of any excess acid, and at the same time make the mechanical mixture of such condition that it can be readily handled and distributed by drilling. The foregoing fertilizer materials are, of course, sold separately for special requirements, and also mixtures are placed on the market furnishing two elements, such as nitrogen and phosphoric acid or such mixtures as dissolved phosphate rock and potash salts supplying phosphoric acid and potash, as the trade may demand. Ground bones are also acidulated and offered as dissolved bones and used as an ingredient in fertilizers, such treatment making the phosphoric acid in the same more quickly available.

After the various ingredients have been mixed together as a complete fertilizer the chemical analysis is employed to determine whether or not the plant food guaranteed is really furnished and further, where possible, by such methods as are known, to show the character or source of the constituents making up any certain brand or grade. The total nitrogen includes all that which may be present, but does not show the degree to which it may be available or utilized by the plant. The so-called alkaline permanganate method is employed to show the different degrees of availability of nitrogen. That portion of the insoluble nitrogen determined by this method indicates whether or not the source is from low grade or high grade materials. As indicated in the tables showing results of analyses, where the active insoluble nitrogen is in the "a" or "b" class, good grades of materials have been used, whereas those in the "c" class are an indication that low grade sources of nitrogen have been used, excepting cyanamid.

Such products as untreated hair, leather, hoofs and horns will show a low percentage of activity, while after these materials have been treated or made more or less available by acidulating processes, and where higher grade materials are used, the activity of the nitrogen will be shown in a higher class. In the same manner the total phosphoric acid content is not an index of the extent of availability of this constituent, and accordingly a method of analysis is employed which will show to what extent the phosphoric acid is available. In the case of the potash, which is determined by extracting a portion of the sample with water, the total amount shown is readily available and whether or not it is present in the form of muriate or sulphate is arrived at by making a determination for chlorine, from which it is estimated in what form this plant food was introduced. In order to determine whether or not the untreated materials specified in section 4 of the fertilizer law have been used, or whether or not the source of the phosphoric acid is from bone, where the word "bone" is used as a part of the brand name it is necessary to make a microscopical examination of the samples and to employ other chemical tests. As previously noted, no evidence of violations were observed from miscroscopical examinations. It is recognized, however, that it is difficult and even impossible in certain cases to recognize the source of nitrogen in materials which have been acid treated and the original condition or structure entirely destroyed.

KEY TO TABLES

All samples analyzed were given a chemist's number as shown in the extreme left and right hand columns.

Composite samples are indicated by brackets embracing two or three chemists' numbers of the same brand of fertilizer. In these cases the brand name is shown only once.

Samples analyzed are grouped in alphabetical order of manufacturers' names and in these groupings brand names are shown in the same order.

The asterisk (*) indicates the cases where total nitrogen, available phosphoric acid and total potash are deficient to the extent of .2 per cent. or more below their respective guarantees. In cases where the guarantees are .5 per cent. or less the deficiencies noted are where the amount is .1 per cent. or more below the guarantees.

Order of results of analysis: Moisture, Total Nitrogen found and guaranteed, Available Nitrogen, Water Soluble Nitrogen, Active Insoluble Nitrogen, Inactive Insoluble Nitrogen, Total Phosphoric Acid found and guaranteed; Available Phosphoric acid, found and guaranteed; Insoluble Phosphoric acid; Total Potash, found and guaranteed. The Potash is shown as Muriate in the column and those cases where Potash is present in part or in whole as Sulphate, a dagger at the bottom of the page shows the percentages of Potash in these forms.

"a," "b," "c," the letters prefixed to the percentages of Active Insoluble Nitrogen indicates that portion of the Water Insoluble Nitrogen which is active and assimilated by plants. The cases where the Active Insoluble Nitrogen is 3-5 or 60% or more of the Water Insoluble Nitrogen are indiacted by "a." The cases where from 2-5 to 3-5 or from 40% to 60% of the Insoluble Nitrogen is Active, are indicated by "b," and by "c" where this form is 2-5 or 40% or less.

The sum of the percentages of Active Insoluble Nitrogen and Water Soluble Nitrogen equals the amount of Available Nitrogen.

To determine percentage of Ammonia, multiply percentage of Nitrogen by factor 1.2158. To determine the formula of any brand, as guaranteed, multiply Total Nitrogen by 1.2158 to obtain Ammonia and then use this figure and the guarantees for Available Phosphoric Acid and Total Potash. For example, Nitrogen guarantee equals .82% (.82×1.2158=1%). Ammonia equals 1%, Available Phosphoric Acid 8%, Potash 1%. Formula therefore is 1-8-1.

Complete Fertilizers, Table I, furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen and Phosphoric Acid Fertilizers, Table II, including Dissolved Bones and other like products.

Ground Bone Fertilizers, Table III, furnishing Nitrogen and Phosphoric Acid.

Acidulated Phosphate Fertilizers, Table IV, furnishing Phosphoric Acid.

Rock and Potash Fertilizers, Table V, furnishing Phosphoric Acid and Potash.

Miscellaneous Fertilizers, Table VI, including Nitrate of Soda, Tankage, Ground Fish, Meat and Bone and Pulverized Phosphate Rock.

TABLE NO I.—

Furnishing Nitrogen,

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—	Moisture.
	THE AMERICAN AGRICULTURAL CHEMICAL CO., NEW YORK, N. Y.		%
147	Bradley's B. D. Sea Fowl Guano, 1916,	J. A. McKelvey, Blairsville,	9.36
154	Bradley's Niagara Phosphate,	A. Krause & Son, Marwood,	4.56
253	Bradley's Unicorn, 1916,	W. I. Liester, Cocolamus,	9.75
142	Canton Chemical Harrow Brand Crop Grower,	William Gates Estate, Kittanning,	10.30
467	Canton Chemical Resurgam Guano, 1916,	Irvin E. Mengle, Barnesville,	6.80
122	Crocker's New Rival Fertilizer, 1916,	Francis Shoemaker, Quarryville, R. D.	8.80
820	Crocker's Wheat and Corn Fertilizer, 1916,	J. M. Abbott, Sugar Grove,	3.70
27	Dead Shot Phosphate, 1916,	A. G. Houtz, Myerstown, R. No. 1,	6.67
359		J. R. Weaver, New Oxford,	
520		Mowry Latshaw Hardware Co., Spring City.	
857	Detrick's Imperial Compound, 1916,	Levi Berkey, Somerset,	6.68
738	Detrick's Kangaroo Komplete Kompound, 1916,	Grover Uffelman, Parke,	8.67
554	Detrick's Special Ammoniated Compound,	W. G. O'Cline, Somerset,	5.35
694	East India Economizer Phosphate, 1916,	William Mittman, Easton, R. D. No. 4.	6.85
892	W. S. Farmer & Co.'s Harvest Queen,	W. R. McCartney, Farmington,	10.20
167	General Crop Grower, 1916,	Elmer Car, Coopersburg, R. D. No. 2,	14.58
689	Great Eastern Northern Corn Special, 1916,	I. G. Williams, Ariel, R. D. No. 1,	10.35
218	Great Eastern High Grade Potato Fertilizer,	J. C. Miller, Sand Patch, R. D. No. 1.	13.89
563	Great Eastern Special Crop Fertilizer, 1916,	Alexander Trent, Friedens, R. D. No. 2.	6.00
691	Lazaretto AA Superphosphate, 1916,	I. G. Williams, Ariel. R. D. No. 1,	10.35
56	Maryland O. K. Ammoniated Fertilizer, 1916,	Samuel Heim, Pitman,	4.56
564	Milsom's Erie King Fertilizer, 1916,	John H. Woy, Coleman,	4.06
89	Moro-Phillips C. & G. Complete Fertilizer, 1916.	Samuel Yearick, Rebersburg,	4.96
519		I. J. Tustin, Phoenixville,	
518	Moro-Phillips Pure Phuine, 1916,	I. J. Tustin, Phoenixville,	7.66
693	Odorless Grass and Lawn Top Dressing, 1916,	George F. Phillips, Ariel,	6.15
874	Packers' Union Animal Corn Fertilizer, 1916,	N. H. Blough, Davidsville,	7.91
876	Packers' Union Gardeners Complete Manure, 1916.	N. H. Blough, Davidsville,	5.09
875	Packers' Union Potato Manure, 1916,	N. H. Blough, Davidsville,	7.01
797	Packers' Union Superior Crop Grower, 1916,	Sharer Brothers, Bald Eagle,	7.00
171	Packers' Union Universal Fertilizer, 1916,	Charles Hartzel, Easton, R. D. No. 5,	10.31
168	Quinnipiac Climax Phosphate, 1916,	Elmer Car, Coopersburg, R. D. No. 2,	6.74
590		Paxton Flour & Feed Co., Bowmansdale.	
87	Read's Corn, Wheat and Rye, 1916	W. H. Stover, Millheim,	9.15
692	Read's Vegetable and Vine Fertilizer, 1916,	George F. Phillips, Ariel, R. D. No. 1.	5.25
685	Reese's Ammoniated Phosphate Mixture, 1916.	Albert Kressler, Trexlertown,	1.75
826		Irwin H. Levengood, Boyertown,	
25	Reese's Challenge Crop Grower, 1916,	A. G. Houtz, Myerstown, R. No. 1,	5.17
802		W. D. Walker & Bro., Bigler,	
98	Reese's Half and Half,	William Hess, York,	5.93
613		S. H. Wolf, Stevens, R. D. No. 2,	
766	Reese's Half and Half No. 1,	William W. Hall, Danboro,	4.23
28	Reese's Mayflower, 1916,	A. G. Houtz, Myerstown, R. No. 1,	8.57
660	Sharpless & Carpenter's Farmer Brand Phosphate, 1916.	J. Watson Craft, Ambler,	8.50
16	Susquehanna Crop Grower,	J. J. Jacobs, York Springs,	6.62
259		D. R. Smith, Wolfsburg,	
189	Susquehanna XXV Phosphate,	Henry Moyer. Campbelltown,	12.85
242	Universal Grain Grower,	E. S. Parker, Mifflintown,	8.10
333		S. A. Fishburn, Penbrook,	
542		Jeff Altfather, Berlin,	

a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

COMPLETE FERTILIZERS.

Phosphoric Acid and Potash.

NITROGEN.						PHOSPHORIC ACID.					POTASH.		Selling price per ton at place of selection.	Chemist's number.
Total.				Insoluble.		Total.		Available.						
Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.		
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
0.97	0.82	0.66	0.36	b0.30	0.31	13.00	11.00	10.41	10.00	2.59	1.21	1.00	23 50	147
0.91	0.82	0.78	0.58	b0.20	0.13	9.95	8.00	8.19	7.00	1.76	†0.84	1.00	25 00	154
1.63	1.65	1.15	0.71	b0.44	0.48	11.66	10.00	9.17	9.00	2.49	1.29	1.00	25 00	253
0.90	0.82	0.57	0.33	b0.24	0.33	10.37	9.00	8.53	8.00	1.84	1.29	1.00	25 00	142
1.08	0.82	0.94	0.66	a0.28	0.14	12.22	11.00	10.84	10.00	1.38	†1.00	1.00	25 50	467
1.24	1.23	0.97	0.61	b0.36	0.27	12.34	11.00	10.64	10.00	1.70	1.27	1.00	25 50	122
2.10	2.06	1.88	1.38	a0.50	0.22	11.51	9.00	9.85	8.00	1.66	1.21	1.00	32 00	820
0.60	0.41	0.49	0.35	b0.14	0.11	10.35	9.00	9.58	8.00	0.77	1.03	1.00	..... 20 50 24 00	27 359 520
1.42	0.82	1.14	0.76	b0.38	0.28	12.69	11.00	11.13	10.00	1.56	1.41	1.00	24 00	857
1.63	1.65	1.28	0.89	b0.39	0.35	12.34	11.00	10.16	10.00	2.18	1.32	1.00	25 25	738
0.95	0.82	0.76	0.57	b0.19	0.19	10.61	9.00	8.93	8.00	1.68	†1.21	1.00	23 00	554
1.24	0.82	0.99	0.58	a0.41	0.25	11.75	9.00	10.41	8.00	1.34	†1.25	1.00	23 50	694
1.44	1.23	1.12	0.84	b0.28	0.32	12.51	11.00	10.85	10.00	1.66	1.45	1.00	29 00	892
1.79	1.65	1.57	1.10	a0.47	0.22	10.79	10.00	9.55	9.00	1.24	1.31	1.00	.....	167
2.41	2.06	2.11	1.53	a0.58	0.30	10.26	9.00	9.02	8.00	1.24	1.02	1.00	30 00	689
*1.16	1.65	0.77	0.53	c0.24	0.39	11.01	11.00	9.96	10.00	1.05	1.19	1.00	27 00	218
1.16	0.82	1.01	0.86	b0.15	0.15	9.77	11.00	*8.49	10.00	1.28	2.97	1.00	.....	563
1.91	2.06	1.41	0.84	b0.57	0.50	9.48	9.00	7.82	8.00	1.66	1.02	1.00	27 00	691
1.16	0.82	1.00	0.70	a0.30	0.16	9.49	9.00	8.28	8.00	1.21	1.00	1.00	20 00	56
0.88	0.82	0.78	0.66	b0.12	0.10	9.17	8.00	7.91	7.00	1.26	1.12	1.00	.....	564
1.00	0.82	0.56	0.20	b0.36	0.44	11.00	9.00	8.58	8.00	2.42	†1.03	1.00	21 35 28 00	89 519
1.90	1.65	1.69	1.23	a0.46	0.21	11.76	11.00	10.48	10.00	1.28	1.20	1.00	30 00	518
3.75	3.70	3.40	2.69	a0.71	0.35	9.38	9.00	8.74	8.00	0.64	1.11	1.00	40 00	693
1.60	1.65	1.46	1.16	a0.30	0.14	12.46	11.00	11.44	10.00	1.02	1.26	1.00	30 00	874
2.52	2.47	2.30	1.87	a0.43	0.22	11.52	10.00	10.40	9.00	1.12	1.23	1.00	33 00	876
*1.86	2.06	1.70	1.41	a0.29	0.16	11.97	11.00	10.99	10.00	0.98	1.17	1.00	32 00	875
0.93	0.82	0.53	0.16	b0.37	0.40	13.11	11.00	10.43	10.00	2.68	†1.19	1.00	22 50	797
1.07	0.82	0.93	0.56	a0.37	0.14	11.29	9.00	10.21	8.00	1.08	†1.21	1.00	23 00	171
0.90	0.82	0.58	0.32	b0.26	0.32	9.64	9.00	8.11	8.00	1.53	1.16	1.00	..... 23 25	168 590
1.55	1.65	1.15	0.67	b0.48	0.40	11.97	10.00	9.58	9.00	2.39	1.15	1.00	.....	87
2.35	2.47	2.05	1.54	a0.51	0.30	11.94	10.00	10.35	9.00	1.59	1.09	1.00	40 00	692
1.08	0.82	0.86	0.57	b0.29	0.22	11.48	11.00	10.33	10.00	1.15	1.18	1.00	..... 25 50	685 826
0.92	0.82	0.79	0.58	a0.21	0.13	10.59	9.00	9.61	8.00	0.98	†1.22	1.00	..... 24 00	25 802
1.10	0.82	0.87	0.61	b0.26	0.23	9.26	9.00	*7.75	8.00	1.51	0.97	1.00	21 00 21 50	98 613
1.88	0.82	1.77	1.51	a0.26	0.11	9.15	8.00	8.12	7.00	1.03	1.02	1.00	21 00	766
1.96	1.65	1.74	1.25	a0.49	0.22	10.84	10.00	9.72	9.00	1.12	1.29	1.00	.....	28
1.05	0.82	0.85	0.57	b0.28	0.20	11.79	11.00	10.21	10.00	1.58	1.10	1.00	24 00	660
0.98	0.82	0.67	0.40	b0.27	0.31	9.48	8.00	7.95	7.00	1.53	1.19	1.00	21 85 22 00	16 259
0.99	0.82	0.78	0.58	b0.20	0.21	10.19	9.00	8.75	8.00	1.44	1.09	1.00	.....	189
1.00	0.82	0.55	0.19	b0.36	0.45	10.51	9.00	8.85	8.00	1.66	2.00	2.00	.... 25 75	242 333 542

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*Deficient.
†No. 154 As muriate, 0.47%; as sulphate, 0.37%.
†No. 467 As muriate, 0.81%; as sulphate, 0.19%.
†No. 554 As muriate, 1.06%; as sulphate, 0.15%.
†No. 694 As muriate, 0.77%; as sulphate, 0.48%.
†No. 89 As muriate, 0.80%; as sulphate, 0.23%.
†No. 797 As muriate, 0.85%; as sulphate, 0.34%.
†No. 171 As muriate, 0.85%; as sulphate, 0.36%.
†No. 25 As muriate, 0.54%; as sulphate, 0.68%.

TABLE NO. I.—COMPLETE

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—	Moisture.
			%
377	Wheeler's Royal Wheat Grower, 1916, ...	Clinton Brader, Butztown, ...	6.67
833	Williams & Clarks Royal Phosphate, 1916, ...	William Shaeffer, Leesport, ...	8.61
450	Wilson's Soil Enricher, 1916, ...	Aaron Zimmerman, Lehighton, R. D.	8.17
498	Zell's Economizer Phosphate, 1916, ...	Nathaniel Yearick, Jacksonville, ...	10.55
501		Kinsloe & Ewing, Newton Hamilton,	
396	Zell's Hustler Phosphate, 1916, ...	John Wochter, Lynnport, ...	8.04
	AMERICAN FERTILIZER CO., BALTIMORE, MD.		
131	American Emergency Special Compound Guano.	Jones Evason, Christiana, ...	6.82
338		N. R. Yost, Myerstown, ...	
580	American Reliable Guano, ...	M. F. Bailey, Wellsboro, ...	9.50
188	American Special Formula, ...	N. R. Yost, Myerstown, ...	3.74
337	American Special Formula for Grain & Grass,	N. R. Yost, Myerstown, ...	5.92
	ARMOUR FERTILIZER WORKS, INC., BALTIMORE, MD.		
199	Crop Grower 1-8-2, ...	M. L. Bachman, Lebanon, ...	6.95
487		A. M. Grove & Co., Muddy Creek Forks.	
625		William Siegfried, Kempton, ...	
223	Wheat, Corn and Oats Special 1-7-1, ...	F. W. Bender, H. M. Gelnit, A. C. Schrock, Elk Lick, Star Route.	5.75
	BALTIMORE FERTILIZER CO., BALTIMORE, MD.		
9	Honest Tankage Rock and Potash, ...	N. S. Bosserman, Lehmaster, ...	3.74
13		J. E. Maxheimer, St. Thomas, ...	
10	Old Honesty, ...	N. S. Bosserman, Lehmaster, ...	5.52
	BAUGH & SONS CO., PHILADELPHIA, PA.		
94	Baugh's Double Eagle Phosphate, ...	Brillinger & Swartz, Emigsville, ...	6.93
192		A. G. Sellers, Annville, ...	
464		C. W. Kleckner, Ringtown, ...	
354	Baugh's Durable Plant Food, ...	Aspers Produce Co., Aspers, ...	8.55
463		C. W. Kleckner, Ringtown, ...	
665		E. A. & J. L. Pennock, Chatham, ..	
725	Baugh's Fish Base and Potash, ...	Adolph Boettinger, Danville, ...	11.28
3	Baugh's General Crop Grower (For All Crops).	D. W. Foust & Sons, Chambersburg,	6.04
58		W. W. Haas, Pitman, ...	
440		A. C. & T. E. Grazier, Warriors Mark, R. D.	
	THE BERG CO., PHILADELPHIA, PA.		
651	Berg's Special Bone Manure, ...	William M. Holbert, Warrington, ...	6.91
	BOWKER FERTILIZER CO., NEW YORK, N. Y.		
197	Bowker's Crop Grower, ...	Darius Cassel, Lebanon, R. D. No. 2.	13.41
194	Bowker's Farm and Garden Phosphate, 1916,	I. F. Long, Annville, ...	8.20
524		Harvey L. Moses, Chester Springs,	
621	Bowker's Staple Phosphate, 1916, ...	D. M. Witmer, Safe Harbor, ...	7.26
	THE CENTRAL CHEMICAL CO., HAGERSTOWN, MD.		
837	C. C. C. Farmers Mixture, ...	F. R. Oburn, Saulsburg, ...	3.43
67	C. C. C. Fish Bone and Potash, ...	S. K. Savidge, Hegins, R. D., ...	4.98
676		Oliver Delong, Slatington, ...	
37	C. C. C. Golden Sheaf, ...	C. Henry Keiter, Halifax, R. No. 1,	2.38
859		G. R. Stahl, Somerset, R. D. No. 2,	
38	C. C. C. Planters Mixture, ...	C. Henry Keiter, Halifax, R. No. 1,	5.57

a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

FERTILIZERS—Continued.

NITROGEN.						PHOSPHORIC ACID.					POTASH.		Selling price per ton at place of selection.	Chemist's number.
Total.				Insoluble.		Total.		Available.						
Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.		
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
0.93	0.82	0.73	0.38	a0.35	0.20	10.59	9.00	9.70	8.00	0.89	†1.15	1.00	22 00	377
1.38	1.23	1.06	0.67	b0.39	0.32	11.95	11.00	10.61	10.00	1.34	1.22	1.00	24 00	833
1.53	1.65	1.24	0.67	a0.57	0.29	11.25	10.00	10.04	9.00	1.21	1.40	1.00	26 00	450
0.89	0.82	0.46	0.13	b0.33	0.43	9.90	9.00	8.65	8.00	1.25	1.06	1.00	....	498 501
1.16	0.82	0.83	0.50	b0.33	0.33	11.61	11.00	9.98	10.00	1.63	1.02	1.00	23 00	396
0.86	0.41	0.59	0.41	c0.18	0.27	9.22	8.00	8.14	7.00	1.08	1.17	1.00	21 00	131 338
1.13	0.82	0.82	0.67	c0.15	0.31	10.14	9.00	8.42	8.00	1.72	1.45	1.00	30 00	580
0.50	0.41	0.40	0.29	b0.11	0.10	8.78	9.00	*7.80	8.00	0.98	1.20	1.00	21 25	188
0.94	0.41	0.62	0.45	c0.17	0.32	10.77	9.00	9.62	8.00	1.15	†1.82	2.00	24 50	337
1.07	0.82	0.63	0.43	c0.20	0.44	9.34	8.50	8.38	8.00	0.96	2.03	2.00	27 50 21 00 25 25	199 487 625
1.04	0.82	0.59	0.38	c0.21	0.45	8.84	7.50	7.63	7.00	1.21	†1.00	1.00	22 00	223
0.55	0.40	0.25	0.12	c0.13	0.30	10.70	8.00	9.23	7.00	1.47	0.54	0.25	17 50 17 00	9 13
0.94	0.80	0.44	0.19	c0.25	0.50	9.62	9.00	8.27	8.00	1.35	0.47	0.25	19 00	10
1.67	1.65	0.93	0.53	c0.40	0.74	11.33	.....	9.33	8.50	2.00	†1.17	1.00	26 00 23 50 27 00	94 192 464
1.78	1.65	1.25	0.92	c0.33	0.53	10.79	.....	9.51	8.00	1.28	†2.00	2.00	29 50 30 00 30 00	354 463 665
1.31	1.02	0.97	0.76	c0.21	0.34	9.54	.....	8.07	8.00	1.47	2.01	2.00	26 50	725
1.15	0.82	0.73	0.53	c0.20	0.42	11.33	.....	9.03	8.00	2.30	†1.28	1.00	21 15 20 50 22 00	3 58 440
2.00	2.00	1.37	0.55	b0.82	0.63	14.72	11.00	9.78	7.00	4.94	*0.76	1.00	27 00	651
0.99	0.82	0.88	0.64	a0.24	0.11	10.89	10.00	9.74	9.00	1.15	1.02	1.00	23 50	197
2.02	1.65	1.66	1.11	a0.55	0.36	11.34	11.00	9.81	10.00	1.53	1.32	1.00	28 00 30 00	194 524
1.00	0.82	0.64	0.36	b0.28	0.36	10.56	9.00	8.38	8.00	2.18	1.11	1.00	24 00	621
0.97	0.82	0.54	0.25	b0.29	0.43	10.05	.....	9.23	8.00	0.82	†1.97	2.00	25 00	837
1.54	1.04	1.09	0.71	b0.38	0.45	10.72	.....	9.57	8.00	1.15	†0.93	1.00	..... 23 00	67 676
1.01	0.82	0.75	0.36	a0.39	0.26	9.98	.....	8.70	8.00	1.28	*†0.80	1.00	21 00 20 40	37 859
1.76	1.65	1.37	0.91	b0.46	0.39	11.11	.....	10.05	10.00	1.06	†1.34	1.00	25 00	38

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*Deficient.

†No. 377 As muriate, 0.82%; as sulphate, 0.33%.
†No. 337 As muriate, 0.69%; as sulphate, 1.13%.
†No. 223 As muriate, 0.81%; as sulphate, 0.19%.
†No. 94 As muriate, 0.18%; as sulphate, 0.99%.
†No. 354 As muriate, 1.12%; as sulphate, 0.88%.
†No. 3 As muriate, 0.96%; as sulphate, 0.32%.
†No. 837 As muriate, 0.80%; as sulphate, 1.17%.
†No. 67 As muriate, 0.38%; as sulphate, 0.55%.
†No. 37 As muriate, 0.27%; as sulphate, 0.53%.
†No. 38 As muriate, 0.42%; as sulphate, 0.92%.

TABLE NO. I.—COMPLETE

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—	Moisture.
			%
	THE COE-MORTIMER CO., NEW YORK, N. Y.		
646	E. Frank Coe's Columbia Corn & Potato Fertilizer, 1916.	The I. W. Scott Co., Pittsburgh, ...	5.22
681		O. W. Bastian, Wescosville, ...	
886		J. G. Cover, Masontown, ...	
395	E. Frank Coe's Penna. No. 1 Grain Special, 1916.	Charles Hartman, Wannamakers, ...	2.84
426		George Ward, Clearville, No. 1, ...	
636		Walter Gongaware, Irwin, ...	
63	E. Frank Coe's Universal Fertilizer, 1916, ..	Charles Schoffstall, Valley View, ...	5.80
683		Daniel Weigle, Magunga, ...	
832		J. K. Mast, Elverson, R. D. No. 3, ..	
	COLUMBIA GUANO CO., BALTIMORE, MD.		
254	Columbia Grain Special Fertilizer, ...	J. C. Kipp, McAllisterville, ...	6.61
311		D. W. & H. W. Grove, Catawissa,..	
499		W. F. Miller, Lamar, ...	
	CONSUMERS CHEMICAL CORPORATION, NEW YORK, N. Y.		
573	Cosumers XXX Fish & Potash Mixture, ...	Wysox Produce Co., Wysox, ...	1.60
	JOSIAH COPE & CO., BALTIMORE, MD.		
545	Cope's Special Ammoniated Mixture, 1916,	H. L. Countryman, Berlin, R. D. No. 2.	3.75
671		F. E. Bailey, Northbrook, ...	
130	Cope's Wheat & Grass Special, ...	Jones Evason, Christiana, ...	5.12
544		H. L. Countryman, Berlin, R. D. No. 2.	
670		F. E. Bailey, Northbrook, ...	
	EASTERN CHEMICAL CO., NEW YORK, N. Y.		
160	Eastern Anchor Brand.	Thompson & Glenn, Butler, ...	3.56
	EUREKA CHEMICAL CO., BALTIMORE, MD.		
32	Eureka Grain & Grass, ...	J. C. Speicher, Liverpool, ...	3.73
745		J. H. Bartenslager, Stewartstown, ..	
341	Eureka Potato & Vegetable, ...	Ed. Urich, Myerstown, ...	8.37
	FARMERS FERTILIZER WORKS, ELIZABETHTOWN, PA.		
30	Special Compound, ...	John Sheets, Elizabethville, ...	6.60
616		M. S. Graybill & Son, Bareville, ...	
	GRIFFITH & BOYD CO., BALTIMORE, MD.		
667	Animal Bone with Potash, ...	E. A. & J. L. Pennock, Chatham, ..	6.48
126	Fish, Bone & Potash, ...	Willis C. Herr, Strasburg, ...	4.08
312		D. W. & H. W. Grove, Catawissa, ..	
642		L. & F. Hoburg, Etna, ...	
313	Fish, Bone & Potash (with 2% Potash), ...	D. W. & H. W. Grove, Catawissa,	6.11
483		J. A. Scarborough & Son, Delta, ...	
21	Harvest Queen Phosphate, ...	J. B. Spera, Dillsburg, ...	5.21
90		H. S. Limbert, Centre Hall.	
419		A. B. Harnish, Mechanicsburg, ...	
196	Peerless Fertilizer, ...	Mrs. Uriah Buck, Palmyra, R. No. 2,	6.25
388		A. C. Garr, Edlemans, R. D. No. 1,	
666		E. A. & J. L. Pennock, Chatham, ...	
307	Reliable Crop Grower, ...	E. C. Renn & Son, Mansdale, ...	5.58
389	Special Royal Guano, ...	A. C. Garr, Edlemans, R. D. No. 1,	4.02

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a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen,

FERTILIZERS—Continued.

NITROGEN.						PHOSPHORIC ACID.					POTASH.		Selling price per ton at place of selection.	Chemist's number.
Total.				Insoluble.		Total.		Available.						
Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.		
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
1.42	1.23	0.59	0.24	c0.35	0.83	12.31	11.00	11.23	10.00	1.08	1.02	1.00	31 00 ..... 30 00	646 681 886
1.15	0.82	0.78	0.43	b0.35	0.37	12.68	11.00	10.49	10.00	2.19	1.05	1.00	22 00 23 35 26 00	395 426 636
1.92	1.65	1.71	1.21	a0.50	0.21	11.68	10.00	10.40	9.00	1.28	1.35	1.00	.... 26 25	63 683 832
1.03	0.82	0.65	0.38	b0.27	0.38	11.03	8.50	10.01	8.00	1.02	†1.97	2.00	..... 27 00 22 75	254 311 499
1.76	1.65	1.24	0.50	b0.74	0.52	10.89	9.00	8.66	8.00	2.23	†1.38	1.00	30 00	573
1.58	1.65	1.25	0.78	b0.47	0.33	11.28	10.00	9.94	9.00	1.34	1.23	1.00	26 00 27 00	545 671
1.06	0.82	0.87	0.61	b0.26	0.19	10.10	9 00	8.51	8.00	1.59	0.98	1.00	23 00 23 00 23 00	130 544 670
0.98	0.82	0.66	0.33	b0.33	0.32	9.89	.....	*7.76	8.00	2.13	†0.81	1.00	25 00	160
0.91	0.82	0.70	0.55	b0.15	0.21	7.65	7.50	7.14	7.00	9.51	†0.72	0.50	..... 21 00	32 745
1.65	1.64	1.49	1.29	b0.20	0.16	7.60	7.50	7.03	7.00	0.57	1.05	1.00	.....	341
1.53	1.23	0.92	0.37	b0.55	0.61	10.83	9.00	9.30	8.00	1.53	†1.36	1.00	24 00 24 00	30 616
2.14	1.65	1.64	1.07	b0.57	0.50	11.94	10.00	9.96	9.00	1.98	†1.01	1.00	27 50	667
1.73	1.50	1.16	0.64	b0.52	0.57	9.43	8.00	7.90	7.00	1.53	†1.08	1.00	27 00 23 50 30 00	126 312 642
1.56	1.50	0.95	0.38	b0.57	0.61	12.23	8.00	8.98	7.00	3.25	*†1.70	2.00	27 10 25 00	313 483
0.99	0.85	0.71	0.47	b0.24	0.28	9.94	10.00	9.26	9.00	0.68	†1.25	1.00	24 00 ..... 21 50	21 90 419
0.84	0.41	0.48	0.25	c0.23	0.36	10.65	9.00	9.69	8.00	0.96	†1.16	1.00	19 00 19 25 22 00	196 388 666
2.46	0.85	1.24	0.30	b0.94	1.22	11.58	9.00	*7.47	8.00	4.11	*†0.75	1.00	25 00	307
1.10	0.85	0.60	0.25	b0.35	0.50	9.73	9.00	8.68	8.00	1.05	†1.03	1.00	21 00	389

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*Deficient.
†No. 254 As muriate, 1.00%; as sulphate, 0.97%.
†No. 573 As muriate, 0.32%; as sulphate, 1.06%.
†No. 160 As muriate, 0.25%; as sulphate, 0.56%.
†No. 32 As muriate, 0.25%; as sulphate, 0.47%.
†No. 30 As muriate, 0.58%; as sulphate, 0.78%.
†No. 667 As muriate, 0.18%; as sulphate, 0.83%.
†No. 126 As muriate, 0.33%; as sulphate, 0.75%.
†No. 313 As sulphate, 1.70%.
†No. 21 As muriate, 0.31%; as sulphate, 0.94%.
†No. 196 As sulphate, 1.16%.
†No. 307 As muriate, 0.25%; as sulphate, 0.50%.
†No. 389 As muriate, 0.25%; as sulphate, 0.78%.

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—	Moisture.
			%
	S. M. HESS & BROTHER, INC., PHILADELPHIA, PA.		
181	Farmers General Fertilizer, 1916,	W. J. Newhart, Saylorsburg,	11.05
456	Fish & Potash Manure, 1916,	Martin Beer, Palmerton,	8.40
863		Philip Spory, Boswell, R. D. No. 1,	
230	Keystone Phosphate,	Simon P. Foust, Berlin, R. D. No. 3,	7.68
179	Potato Manure, 1916,	W. J. Newhart, Saylorsburg,	11.34
180	Wheat & Grass Manure, 1916,	W. J. Newhart, Saylorsburg,	6.87
873		Austin Hemminger, Hollsopple,	
	THE HUBBARD FERTILIZER CO., BALTIMORE, MD.		
248	Hubbard's English Compound,	W. H. Seibers, McAlisterville,	4.89
249	Hubbard's National Compound 2-10-½,	W. H. Seibers, McAlisterville,	5.80
	M. P. HUBBARD CO., INC., BALTIMORE, MD.		
736	Hubbard's Fish, Phosphate & Potash Mixture,	Rishel Kreamer, Jerseytown,	7.81
827	Hubbard's Good and Cheap Compound,	L. A. Geiger, Joanna,	5.68
509	Hubbard's Never Fail Compound,	John Shivey, Lewistown,	5.48
828		L. A. Geiger, Joanna,	
	THE INDUSTRIAL GUANO, CO., BALTIMORE, MD.		
129	Industrial Clover Pride,	Jones Evason, Christiana,	4.56
	INTERNATIONAL AGRICULTURAL CORPORATION, BUFFALO FERTILIZER WORKS, BUFFALO, N. Y.		
240	Buffalo General Favorite,	D. H. Shivery, Bellefonte,	3.87
823		A. E. Rice, Eldred, R. D. No. 3,	
	THE JARECKI CHEMICAL CO., SANDUSKY, OHIO.		
547	Raw Bone and Phosphate Mixture,	S. S. Mosholder, Rockwood, R. D.,	5.39
548	Tobacco and Truck Grower,	S. S. Mosholder, Rockwood, R. D.,	8.02
	KEYSTONE BONE FERTILIZER COMPANY, PHILADELPHIA, PA.		
51	1916 Keystone Grain & Grass Manure,	Charles Schoffstall, Valley View,	5.56
137		J. H. Summy, Landisville,	
654		William M. Holbert, Warrington,	
68	1916 Keystone Royal Corn & Potato Manure,	Charles Schoffstall, Valley View,	7.88
653		William M. Holbert, Warrington,	
	THE LANCASTER BONE FERTILIZER CO., LANCASTER, PA.		
473	Special Guano,	Josiah Flinchbough, Windsor,	6.57
	THE LANCASTER CHEMICAL CO., LANCASTER, PA.		
186	No. 2 Dewey Brand for Tobacco and Spring Crops.	J. L. Royer, Myerstown, R. No. 2,	4.05
347		A. L. Bierbower, Carlisle,	
	LISTERS AGRICULTURAL CHEMICAL WORKS, NEWARK, N. J.		
151	Listers 1-8-2 Fertilizer,	Morrow & Buxton, Valencia,	7.25
513		R. K. Yoder, Belleville,	
329	Listers Ammoniated Dissolved Superphosphate, 1916.	J. M. Groh, Lickdale,	5.75
762		William H. Fritz, Berwyn,	
410	Listers Golden Sheaf, 1916,	W. H. Fogelsonger, Shippensburg,	6.88
672		F. E. Bailey, Northbrook,	
794		C. A. Boyer, Roaring Springs,	

a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

FERTILIZERS—Continued.

NITROGEN.						PHOSPHORIC ACID.					POTASH.		Selling price per ton at place of selection.	Chemist's number.
Total.				Insoluble.		Total.		Available.						
Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.		
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
1 00	0.82	0.86	0.51	a0.35	0.14	13.13	11.00	11.94	10.00	1.19	†1.09	1.00	23 00	181
1.75	1.65	1.31	0.57	a0.74	0.44	11.16	10.00	9.31	9.00	1.85	1.19	1.00	28 00 27 00	456 863
0.87	0.82	0.76	0.61	b0.15	0.11	10.28	9.00	8.75	8.00	1.53	1.02	1.00	22 03	230
*2.20	2.47	1.89	1.28	a0.61	0.31	11.90	10.00	10.80	9.00	1.10	1.27	1.00	30 00	179
0.99	0.82	0.69	0.31	b0.38	0.30	11.25	10.00	9.72	9.00	1.53	1.15	1.00	22 50 21 85	180 873
0.90	0.82	0.65	0.46	b0.19	0.25	9.25	8.75	7.97	8.00	1.28	1.04	1.00	24 50	248
1.68	1.64	1.00	0.48	b0.52	0.68	11.37	11.00	*9.61	10.00	1.76	0.80	0.50	22 80	249
0.83	0.82	0.65	0.44	b0.21	0.18	11.48	11.50	10.27	10.00	1.21	1.36	1.00	23 00	736
0.89	0.82	0.41	0.21	c0.20	0.48	9.52	9.50	8.88	8.00	0.64	1.29	1.00	20 00	827
1.21	1.00	0.77	0.47	b0.30	0.44	9.24	8.50	8.22	7.00	1.02	†0.58	0.25	22 00 18 00	509 828
0.67	0.41	0.40	0.19	b0.21	0.27	8.75	7.50	7.92	7.00	0.83	†0.71	0.50	19 00	129
1.07	0.80	0.69	0.31	b0.38	0.38	9.98	.....	9.09	8.00	0.89	†1.14	1.00	..... 27 50	240 823
1.63	1.65	1.19	0.61	b0.58	0.44	17.81	16.00	9.20	8.00	8.61	†1.00	1.00	27 25	547
1.66	1.65	1.07	0.58	b0.49	0.59	11.57	9.00	7.85	8.00	3.72	†1.29	1.00	27 00	548
1.09	0.82	0.82	0.64	b0.18	0.27	9.52	8.00	8.37	7.00	1.15	1.02	1.00	22 00 24 00 27 00	51 137 654
1.50	1.65	1.13	0.79	b0.34	0.37	13.02	12.00	11.81	10.00	1.21	1.08	1.00	..... 30 60	68 653
1.20	0.82	0.72	0.33	b0.39	0.48	13.75	9.00	10.24	8.00	3.51	†0.95	0.50	.....	473
1.24	1.23	1.00	0.78	b0.22	0.24	11.14	9.00	8.78	8.00	2.36	0.90	1.00	24 00	186 347
1.18	0.82	0.71	0.37	b0.34	0.47	10.05	9.00	8.61	8.00	1.44	2.02	2.00	29 00 25 00	151 513
2.13	2.06	1.65	1.06	b0.59	0.48	10.70	9.00	8.72	8.00	1.98	†1.05	1.00	29 00 32 00	329 762
0.59	0.41	0.30	0.14	c0.16	0.29	10.46	9.00	9.38	8.00	1.08	1.31	1.00	20 50 22 25 20 50	410 672 794

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*Deficient.
†No. 181 As muriate, 0.32%; as sulphate, 0.77%.
†No. 509 As muriate, 0.43%; as sulphate, 0.15%.
†No. 129 As muriate, 0.24%; as sulphate, 0.37%.
†No. 240 As muriate, 0.59%; as sulphate, 0.55%.
†No. 547 As muriate, 0.33%; as sulphate, 0.67%.
†No. 543 As muriate, 0.30%; as sulphate, 0.99%.
†No. 473 As muriate, 0.66%; as sulphate, 0.29%.
†No. 329 As muriate, 0.85%; as sulphate, 0.20%.

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—	Moisture.
			%
357	Listers Harvest Queen Phosphate, 1916,	J. N. Hersh, New Oxford,	8.06
411		W. H. Fogelsonger, Shippensburg,	
611		Frank Lutz, Stevens,	
471	Listers New York Special Fertilizer, 1916,	W. L. Mitzel, Red Lion, R. D.,	11.58
211	Listers Special Wheat Fertilizer, 1916,	S. J. Ringler, Elk Lick, R. D. No. 1,	5.14
761		William H. Fritz, Berwyn,	
152	Listers Squirrel Brand Fertilizer, 1916,	Morrow & Buxton, Valencia,	7.30
711		Lehner Brothers, Bloomsburg,	
470	Listers Standard Pure Superphosphate of Lime, 1916.	W. L. Mitzel, Red Lion, R. D.,	3.23
763		William H. Fritz, Berwyn,	
72	Listers Wheat & Rye Fertilizer, 1916,	Edward P. Houser, State College,	6.72
212		S. J. Ringler, Elk Lick, R. D. No. 1,	
	FREDERICK LUDLAM CO., NEW YORK, N. Y.		
227	Ludlam's Cecrops Fertilizer All Crop Fertilizer, 1916.	N. B. Shober, Garret,	7.92
95	Ludham's Cecrops Fertilizer C. & G. Brand, 1916.	Zinn & Brother, York,	5.46
228		N. B. Shober, Garret,	
96	Ludham's Cecrops Fertilizer Harvest Queen, 1916.	Zinn & Brother, York,	4.59
772		William Albright, Cochranville,	
367	Ludham's Cecrops Fertilizer No. 2, for Grain and Grass.	Eml. Hoffman, Dover, R. D.,	7.41
	MARTIN FERTILIZER CO., PHILADELPHIA, PA.		
303	Martin's Corn & Cereal Special,	Harry Pyle & Son, Chadds Ford Junction.	5.85
319	Martin's Dissolved Organic Compound,	C. L. Bowersox, Middleburg, R. D.,	5.34
459		A. F. Kimmel, Orwigsburg,	
302	Martin's Sure Grower,	Harry Pyle & Son, Chadds Ford Junction.	6.34
318		C. L. Bowersox, Middleburg, R. D.,	
644		Seibert & Garraux, Allison Park,	
	THE MILLER FERTILIZER COMPANY, BALTIMORE, MD.		
490	Ammoniated,	J. P. Schuchort, New Freedom,	5.13
418	No. 1 Ammoniated,	C. L. Bernheisel & Co., New Kingston.	10.18
484		J. A. Scarborough & Son, Delta,	
626		William Siegfried, Kempton,	
81	Harvest Queen,	J. H. Ross, Lenden Hall,	5.63
110		Biglerville Warehouse Co., Biglerville.	
331		C. R. Bucher, Myerstown, R. No. 4,	
83	Hustler Phosphate,	William Collier, Centre Hall,	5.24
714		Herman Keebler, Montoursville,	
84	No. 1 Hustler Phosphate,	William Collier, Centre Hall,	5.41
198		John Reifein, Lebanon,	
713		Herman Keebler, Montoursville,	
104	Quarter Mixture,	Humbert & Krug, Littlestown,	6.54
317	Special Tobacco Grower,	Howard Klinger, Selinsgrove,	7.30
85	W. G. Phosphate,	William Collier, Centre Hall,	2.92
362		J. Emery Moul, Ironore,	

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a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

FERTILIZERS—Continued.

NITROGEN.						PHOSPHORIC ACID.					POTASH.		Selling price per ton at place of selection.	Chemist's number.
Total.				Insoluble.		Total.		Available.						
Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.		
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
1.30	1.23	0.92	0.55	b0.37	0.38	12.60	11.00	10.79	10.00	1.81	†1.14	1.00	27 50 25 50 26 50	357 411 611
1.50	1.65	1.15	0.74	b0.41	0.35	11.77	10.00	8.90	9.00	2.87	1.22	1.00	26 00	471
2.08	2.06	1.69	1.17	b0.52	0.39	10.41	9.00	9.20	8.00	1.21	1.13	1.00	28 00 32 00	211 761
1.01	0.82	0.66	0.27	b0.39	0.35	10.63	9.00	8.59	8.00	2.04	1.19	1.00	24.50 24 00	152 711
*2.26	2.47	1.75	0.88	a0.87	0.51	11.98	10.00	9.71	9.00	2.27	1.17	1.00	28 50 35 00	470 763
1.83	1.65	1.59	1.22	a0.37	0.24	12.37	11.00	10.84	10.00	1.53	1.12	1.00	..... 27 00	72 212
0.92	0.82	0.69	0.45	b0.24	0.23	12.41	11.00	10.50	10.00	1.91	1.19	1.00	23 50	227
0.57	0.40	0.28	0.11	c0.17	0.29	9.89	9.00	8.81	8.00	1.08	1.15	1.00	20 00 20 75	95 228
0.95	0.82	0.69	0.42	b0.27	0.26	10.98	9.00	9.77	8.00	1.21	1.15	1.00	22 00 22 00	96 772
0.99	0.82	0.76	0.52	b0.24	0.23	9.29	8.00	8.08	7.00	1.21	1.06	1.00	21 00	367
*1.36	1.65	0.87	0.50	b0.37	0.49	12.05	.....	10.17	8.00	1.88	†1.12	1.00	25 50	303
1.18	1.03	0.75	0.39	b0.36	0.43	13.92	.....	10.22	9.00	3.70	†0.56	0.50	....	319 459
1.05	0.82	0.63	0.31	b0.32	0.42	11.06	.....	8.16	8.00	2.90	†1.10	1.00	22 00 ..... 27 00	302 318 644
1.65	1.44	1.30	0.97	b0.33	0.35	8.83	8.50	*7.30	8.00	1.53	†0.66	0.50	21 00	490
1.84	1.65	1.40	1.09	b0.31	0.44	9.40	8.50	8.51	8.00	0.89	†2.01	2.00	28 50 28 00 28 50	418 484 626
1.18	1.03	0.93	0.70	b0.23	0.25	8.80	8.50	7.91	8.00	0.89	†0.83	0.75	23 50 25 00	81 110 331
1.23	0.82	1.02	0.83	b0.19	0.21	8.34	8.50	7.83	8.00	0.51	†1.02	0.50	22 00 21 00	83 714
1.00	0.82	0.65	0.43	c0.22	0.35	9.13	8.50	8.56	8.00	0.57	†1.16	1.00	24 00 ..... 22 00	84 198 713
0.40	0.21	0.25	0.17	c0.08	0.15	10.04	9.50	9.66	9.00	0.38	†0.94	0.25	18 00	104
1.58	1.65	1.34	1.13	b0.21	0.24	7.60	7.50	7.05	7.00	0.55	1.11	1.00	24 00	317
0.56	0.41	0.19	0.01	c0.18	0.37	8.14	7.50	7.57	7.00	0.57	†0.73	0.50	..... 17 00	85 362

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*Deficient.

†No. 357 As muriate, 0.99%; as sulphate, 0.15%.

†No. 303 As muriate, 0.56%; as sulphate, 0.56%.

†No. 319 As muriate, 0.45%; as sulphate, 0.11%.

†No. 302 As muriate, 0.90%; as sulphate, 0.20%.

†No. 490 As muriate, 0.32%; as sulphate, 0.34%.

†No. 418 As muriate, 0.48%; as sulphate, 1.53%.

†No. 81 As muriate, 0.40%; as sulphate, 0.43%.

†No. 83 As muriate, 0.86%; as sulphate, 0.16%.

†No. 84 As muriate, 0.35%; as sulphate, 0.81%.

†No. 104 As muriate, 0.20%; as sulphate, 0.74%.

†No. 85 As muriate, 0.24%; as sulphate, 0.49%.

TABLE NO. I.—COMPLETE

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—	Moisture.
			%
	G. OBER & SONS CO., BALTIMORE, MD.		
44	Ober's Farmers Mixture,	J. L. Royer, Myerstown, R. No. 2, ..	9.01
206		Albert Gerberich, Grantville, ...	
238		D. Wagner Geiss, Bellefonte, ...	
41	Ober's Golden Wheat Grower,	A. M. Engle, Hummelstown, ...	6.89
43		J. L. Royer, Myerstown, R. No. 2,..	
239		D. Wagner Geiss, Bellefonte, ...	
201	Ober's Independent Ammoniated Super-Phosphate.	A. M. Brandt, Campbellstown, ...	6.32
506		W. J. Weiand, Lewistown, R. F. D.,	
722		Myers & Slonaker, Hughesville, ...	
492	Ober's Nitro Potash Compound,	Summit Lumber Co., New Freedom,..	8.93
491	Ober's Star Vegetable Compound,	Summit Lumber Co., New Freedom,..	11.61
	PATAPSCO GUANO CO., BALTIMORE, MD.		
568	Grange Mixture, 1916,	Summit Lumber Co., Clarks Summit,	4.27
603	Patapsco B. B. & P. Brand, 1916,	Charles S. Brunner, New Bloomfield,	6.00
839		Hutchison & Goodman, Huntingdon,..	
602	Patapsco Plant Food with Potash,	Charles S. Brunner, New Bloomfield,	9.18
372	Patapsco 2-8-2 Fertilizer,	H. P. Kochir, Wrightsville, R. D.,..	7.71
604	Sea Gull Guano,	Charles S. Brunner, New Bloomfield,	8.59
	J. D. PERKINS, COATESVILLE, PA.		
664	Perkins' Special Bone Manure,	James C. Chambers, Kennett Square,	4.08
	PIEDMONT-MT. AIRY GUANO CO., BALTIMORE, MD.		
503	Levering's Excelsior 1-8-1,	A. S. McKee, McVeytown, ...	7.05
607	Piedmont Golden Eagle Fertilizer 2-9-1,	C. F. Gelbach, Duncannon, ...	6.08
502	Piedmont Grain Grower 1½-10-1,	A. S. McKee, McVeytown, ...	9.93
	PITTSBURGH PROVISION & PACKING CO., PITTSBURGH, PA.		
634	Keystone Fertilizer,	P. H. Saxman, Latrobe, ...	2.80
891		George B. Sprowls, Claysville, ...	
	THE POLLOCK FERTILIZER CO., BALTIMORE, MD.		
444	The Pollock Fertilizer Co. Ammoniated Super Phosphate, 1916.	J. H. Scott, Petersburg, ...	8.94
771		Harvey Spencor, Cochranville, ...	
	RASIN-MONUMENTAL CO., BALTIMORE, MD.		
15	Rasin's Capitol Crop Compound,	B. F. Nell, Bermudian, ...	12.62
552		C. G. Sechler, Somerset, R. D. No. 1.	
707		H. B. Low & Son, Orangeville, ...	
71	Rasin's Capitol Crop Compound Revised,	Chester McCormick, State College, ..	8.93
14	Rasin's Emergency Royal Fish Bone & Potash.	B. F. Nell, Bermudian, ...	7.34
296		E. H. Keen & Co., Parkesburg, ...	
251	Rasin's Royal Fish Bone & Potash,	W. W. Book, Port Royal, ...	11.09
527		A. L. Gehman, New Britain, ...	
709		H. B. Law & Son, Orangeville, ...	
102	Rasin's Royal Manure,	J. D. Markle, Hanover, ...	7.44
551		C. G. Sechler, Somerset, R. D. No. 1,	
185	Rasin's United Grain Grower,	Elias B. Brubacher, Richland, ...	9.71
539		A. L. Gehman, New Britain, ...	
101	Rasin's Wheat, Corn & Oats Mixture,	J. D. Markle, Hanover, ...	6.15
246		W. W. Book, Port Royal, ...	
549		C. G. Sechler, Somerset, R. D. No. 1,	
	READING BONE FERTILIZER CO., READING, PA.		
204	Blood, Meat & Potash Mixture,	A. M. Brandt, Campbelltown, ...	11.38

a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

FERTILIZERS—Continued.

NITROGEN.						PHOSPHORIC ACID.					POTASH.		Selling price per ton at place of selection.	Chemist's number.
Total.		Available.	Water soluble.	Insoluble.		Total.		Available.		Insoluble.	Found.	Guaranteed.		
Found.	Guaranteed.			Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.					
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
1.08	0.82	0.86	0.54	b0.32	0.22	10.42	10.00	9.27	9.00	1.15	2.24	2.00	26 75 25 25 25 81	44 206 228
1.74	1.65	1.45	1.00	a0.45	0.29	10.12	9.00	8.91	8.00	1.21	†2.40	2.00	..... 19 00 28 56	41 43 279
1.10	0.82	0.81	0.46	b0.35	0.29	9.80	9.00	8.01	8.00	1.79	1.52	1.00	21 50 ..... 23 00	201 506 722
1.85	1.65	1.58	1.05	a0.53	0.27	11.85	10.00	10.01	9.00	1.84	1.51	1.00	24 50	492
*3.65	4.11	3.25	2.55	a0.70	0.40	10.80	9.00	9.01	8.00	1.79	1.74	1.00	34 00	491
1.91	1.65	1.62	1.16	a0.46	0.29	11.53	10.00	9.85	9.00	1.68	1.12	1.00	29 25	568
0.48	0.41	0.21	0.08	c0.13	0.27	9.90	9.00	8.75	8.00	1.15	1.10	1.00	21 00 21 00	603 839
1.00	0.82	0.74	0.50	b0.24	0.26	10.56	9.00	8.75	8.00	1.81	2.12	2.00	26 00	602
1.78	1.65	1.42	0.90	b0.52	0.36	10.27	9.00	*7.62	8.00	2.65	2.01	2.00	28 25	372
0.92	0.82	0.54	0.27	b0.27	0.38	10.55	9.00	8.37	8.00	2.18	1.11	1.00	23 00	604
0.96	0.82	0.80	0.51	a0.29	0.16	10.04	.....	8.60	.....	1.44	0.86	1.00	25 00	664
0.95	0.82	0.69	0.55	c0.14	0.26	9.36	.....	8.72	8.00	0.64	†1.25	1.00	24 25	503
1.66	1.65	1.05	0.64	b0.41	0.61	10.45	....	9.56	9.00	0.89	1.26	1.00	25 75	607
1.32	1.23	0.92	0.72	c0.20	0.40	11.35	.....	11.15	10.00	0.70	†1.44	1.00	26 75	502
1.66	1.43	0.91	0.07	b0.84	0.75	11.79	11.00	*8.22	9.00	3.57	†0.89	1.00	20 00 27 50	634 891
1.74	1.65	1.32	0.83	b0.49	0.42	11.70	10.00	10.02	9.00	1.68	1.17	1.00	21 00 26 00	444 771
1.08	0.82	0.68	0.49	c0.19	0.40	10.93	10.00	9.78	9.00	1.15	3.47	3.00	28 85 30 00 29 25	15 552 707
0.92	0.82	0.73	0.56	b0.17	0.19	11.37	10.00	9.58	9.00	1.79	1.38	1.00	22 75	71
1.79	1.65	1.28	0.90	b0.48	0.41	10.68	9.50	9.34	8.50	1.34	1.66	1.00	24 25 25 50	14 296
1.69	1.65	1.40	1.02	b0.38	0.29	10.14	9.00	8.35	8.00	1.79	3.25	3.00	30 00 32 25 32 00	251 537 709
0.61	0.41	0.44	0.31	b0.13	0.17	9.77	9.00	8.75	8.00	1.02	1.39	1.00	21 50 19 75	102 551
1.16	0.82	0.80	0.57	c0.23	0.36	10.04	9.00	8.51	8.00	1.53	†2.39	2.00	25 00 25 75	185 539
0.74	0.41	0.41	0.25	c0.16	0.33	10.13	9.00	9.30	8.00	0.83	†1.85	2.00	23 50 24 00 23 36	101 246 549
1.70	1.64	1.60	1.35	a0.25	0.10	9.40	9.00	7.54	8.00	1.56	2.79	2.00	28 10	204

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*Deficient.
†No. 41 As muriate, 1.70%; as sulphate, 0.70%.
†No. 503 As muriate, 1.12%; as sulphate, 0.13%.
†No. 502 As muriate, 1.16%; as sulphate, 0.28%.
†No. 634 As muriate, 0.59%; as sulphate, 0.30%.
†No. 185 As muriate, 2.25%; as sulphate, 0.14%.
†No. 101 As muriate, 0.72%; as sulphate, 1.13%.

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—	Moisture.
			%
400	Farmers Tankage & Potash, for Corn, Grain & Grass.	Fred L. Peiffly, Lynnport, ...	7.20
540		Arthur Gross, Danboro, ...	
594		I. C. Troutman, Newport, R. No. 1,	
	READING CHEMICAL CO., READING, PA.		
425	2-8-2, ...	Everett Hardware Co., Everett, ...	7.87
	ROBERT A. REICHARD, ALLENTOWN, PA.		
767	Farmers Choice Phosphate, ...	William W. Hall, Danboro, ...	4.38
457	Surpass Phosphate, ...	Harry Lentz, Palmerton, ...	8.87
	RICHARD HIDE & TALLOW CO., ASHLAND, PA.		
55	Trojan 1-7-1, ...	Reichard Hide and Tallow Co., Ashland.	2.24
	F. S. ROYSTER GUANO CO., BALTIMORE, MD.		
62	Royster's Dreadnought Fertilizer, ...	Thomas Kuntzleman, Tower City, R. D.	5.85
80		J. H. Ross, Lenden Hall, ...	
528		Harvey L. Moses, Chester Springs, ..	
687	Royster's Old Faithful Phosphate, ...	I. G. Williams, Ariel, R. D. No. 1,	6.74
60	Royester's Wheat, Oats & Barley Fertilizer,	Thomas Kuntzleman, Tower City, R. D.	5.76
363		J. Emery Moule, Ironore, ...	
527		Harvey L. Moses, Chester Springs,..	
	THE SCOTT FERTILIZER CO., ELKTON, MD.		
455	Scott's Sure Growth Super-Phosphate, 1916, ..	Nathan Bollinger, Little Gap, ...	6.80
	THE SOUTHERN FERTILIZING CO. (BY THE A. A. C. CO.), YORK, PA.		
370	General Crop Grower, 1916, ...	M. R. Druck, Wrightsville, R. D., ..	8.09
	SWACK'S FERTILIZER WORKS, INC., DUBOIS, PA.		
146	Swack's 1-6-2, ...	Charles T. Wills & Co., Parnassus,..	3.09
235		J. C. Dubbs, Bellefonte, ...	
275		Lloyd Griffith, Osterburg, ...	
273	Swack's Special, ...	Lloyd Griffith, Osterburg, ...	4.41
877	Swack's Special Potato Fertilizer, ...	N. H. Blough, Davidsville, ...	5.71
	SWIFT & COMPANY, INC., BALTIMORE, MD.		
534	Swift's Pure Diamond "K" Grain Grower, ...	W. J. Pratt & Son, Wawaset, ...	6.41
533	Swift's Pure Farmers Favorite, ...	W. J. Pratt & Son, Wawaset, ...	4.92
91	Swift's Pure Reliable Grain Fertilizer, ...	J. S. Waite & Co., Bellefonte, ...	4.75
402		Wm. A. Nickles, Shippensburg, ...	
628		Wm. Siegfried, Kempton, ...	

a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

FERTILIZERS—Continued.

NITROGEN.						PHOSPHORIC ACID.					POTASH.		Selling price per ton at place of selection.	Chemist's number.
Total.				Insoluble.		Total.		Available.						
Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.		
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
1.20	0.82	0.84	0.47	b0.37	0.36	12.23	11.00	*8.59	10.00	3.64	1.07	1.00	25 00 ..... 25 50	400 540 594
1.57	1.64	1.33	1.07	b0.26	0.24	9.50	9.00	8.45	8.00	1.05	†1.93	2.00	30 00	425
1.00	0.82	0.69	0.29	b0.40	0.31	8.37	8.00	7.52	7.00	0.85	†1.06	1.00	22 50	767
1.71	1.64	1.20	0.49	b0.71	0.51	9.40	10.00	8.19	8.00	1.21	†2.10	2.00	.....	457
1.10	0.82	1.02	0.83	a0.19	0.08	7.14	9.00	*5.67	7.00	1.47	†1.02	1.00	24 00	55
1.72	1.65	1.39	0.98	b0.41	0.33	10.64	8.50	9.17	8.00	1.47	†2.05	2.00	.... 31 00	62 80 528
1.93	2.06	1.60	1.19	b0.41	0.33	11.89	8.50	10.81	8.00	1.08	*†0.70	1.00	30 00	687
0.92	0.82	0.70	0.51	b0.19	0.22	10.73	8.50	9.01	8.00	1.72	†2.09	2.00	..... 25 00 28 00	60 363 527
1.74	1.65	1.23	0.76	b0.47	0.51	10.52	.....	8.01	8.00	2.51	†1.48	1.00	.....	455
0.47	0.42	0.37	0.26	b0.11	0.10	9.68	9.00	8.51	8.00	1.17	1.07	1.00	19 00	370
0.99	0.82	0.39	0.15	c0.24	0.60	7.07	.....	6.43	6.00	0.64	†1.85	2.00	28 00 25 00 26 25	146 235 275
2.01	1.64	1.17	0.75	c0.42	0.84	9.40	.....	7.81	6.00	1.59	*†0.97	2.00	29 50	273
1.76	1.65	1.52	1.05	a0.47	0.24	11.11	.....	*7.79	8.00	3.32	1.01	1.00	27 00	877
1.04	0.82	0.77	0.48	b0.29	0.27	12.03	.....	*11.43	12.00	0.60	†1.53	1.00	24 00	534
1.83	1.65	1.34	0.87	b0.47	0.49	9.63	.....	*8.42	9.00	1.21	1.28	1.00	25 00	533
1.00	0.82	0.49	0.13	b0.36	0.51	9.69	.....	8.61	8.00	1.08	1.10	1.00	..... 23 00 21 75	91 402 628

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*Deficient.

†No. 425 As muriate, 0.62%; as sulphate, 1.31%.

†No. 767 As muriate, 0.63%; as sulphate, 0.43%.

†No. 457 As muriate, 1.60%; as sulphate, 0.50%.

†No. 55 As sulphate, 1.02%.

†No. 62 As muriate, 0.80%; as sulphate, 1.25%.

†No. 687 As muriate, 0.20%; as sulphate, 0.50%.

†No. 60 As muriate, 0.44%; as sulphate, 1.65%.

†No. 455 As muriate, 0.88%; as sulphate, 0.60%.

†No. 146 As muriate, 0.62%; as sulphate, 1.23%.

†No. 273 As muriate, 0.69%; as sulphate, 0.28%.

†No. 534 As muriate, 0.99%; as sulphate, 0.54%.

TABLE NO. I.—COMPLETE

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—	Moisture.
	I. P. THOMAS & SON CO., PHILADELPHIA, PA.		%
335	Champion Phosphate,	E. S. Risser, Palmyra,	5.98
57	Grain Special Fertilizer,	J. K. Maurer, Pitman,	7.79
145		Charles T. Wills & Co., Parnassus,	
207		Ed. Shuey, Annville,	
215	Superior Super-Phosphate,	A. O. Beal, Sand Patch,	5.54
807		Keystone Hardware Co., Reynoldsville.	
	TUSCARORA FERTILIZER CO., BALTIMORE, MD.		
819	Standard Phosphate 2-8-2,	E. T. Abbott, Sugar Grove,	5.39
	J. E. TYGERT, PHILADELPHIA, PA.		
769	Golden Harvest Phosphate, 1916,	G. W. Fairies & Co., Chester Heights.	4.00
701	Tygert's Old Reliable Phosphate, 1916,	A. J. Leisloft, Jerseytown, R. D. No. 1.	4.88
768	Tygert's Quaker Special Fertilizer, 1916,	G. W. Fairies & Co., Chester Heights.	6.99
584	Tygert's Special Potato and Tomato Guano, 1916.	F. A. Ackley, Westfield,	3.20
585	Tygert's Vegetable and Corn Fertilizer, 1916,	F. A. Ackley, Westfield,	5.20
	VIRGINIA-CAROLINA CHEMICAL CO., BALTIMORE, MD.		
385	V. C. C. Co.'s Special Compound for Wheat,	Lewis Graver, Easton, R. D. No. 1,	9.18
	WASHINGTON, ALEXANDER & COOKE CO., CHARLESTOWN, W. VA.		
356	W. A. & C. Eagle Crop Grower,	E. S. Kelly, Gettysburg,	8.27
	FOR W. E. WHANN (THE A. A. C. CO.), PHILADELPHIA, PA.		
474	Whann's Chester Valley Special Ammoniated Superphosphate, 1916.	A. L. Miller, York, R. D. No. 6,	8.56
	THE ROBERT A. WOOLDRIDGE CO. (THE A. A. C. CO.), BALTIMORE, MD.		
139	Wooldridge's Ammoniated Phosphate,	Allen Sweigart, Ephrata,	6.78
730		H. V. Smith, Turbotville, R. D. No. 1.	
20	Wooldridge's Champion Stag Phosphate, 1916.	Robert Wentz, Rossville,	9.10
494		I. K. Beaver, Academia,	
610		Allen Sweigart, Ephrata,	
140	Wooldridge's Triumph Brand Phosphate, 1916,	Allen Sweigart, Ephrata,	9.50
	THE WOOLDRIDGE FERTILIZER CO., BALTIMORE, MD.		
349	Clover Leaf Crop Grower,	W. S. Stewart, Carlisle,	4.66
705		Grant Johnson, Millville,	
350	Old Hickory Phosphate,	W. S. Stewart, Carlisle,	4.61
704		Grant Johnson, Millville,	
614	Tiger Phosphate,	E. O. Hacker, Lincoln,	5.21
	YORK CHEMICAL WORKS, YORK, PA.		
374	Dempwolf's Half & Half,	H. E. Stoner, Hellam,	4.74
561		C. A. Will, Rockwood, R. D. No. 2,	

a=3/5 or more. b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

FERTILIZERS—Concluded.

NITROGEN.						PHOSPHORIC ACID.					POTASH.		Selling price per ton at place of selection.	Chemist's number.
Total.				Insoluble.		Total.		Available.						
Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Insoluble.	Found.	Guaranteed.		
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
1.59	1.65	1.34	1.01	b0.33	0.25	9.38	8.50	8.59	8 00	0.79	†1.17	1.00	24 50	335
1.03	0.82	0.83	0.60	b0.23	0.20	9.54	8.50	8.26	8.00	1.28	†2.15	2.00	24 00 29 00 25 75	57 145 207
1.01	0.82	0.66	0.42	b0.24	0.35	8.60	7.50	7.71	7.00	0.89	1.18	1.00	25 00 30 00	215 807
1.65	1.65	0.97	0.36	b0.61	0.68	9.86	8.50	8.33	8.00	1.53	1.88	2.00	32 00	819
0.90	0.82	0.80	0.51	a0.29	0.10	10.05	9.00	8.52	8.00	1.53	1.04	1.00	24 00	769
1.98	2.06	1.64	1.11	a0.53	0.34	11.08	9.00	9.74	8.00	1.34	1.20	1.00	27 00	701
1.18	0.82	1.06	0.77	a0.29	0.12	11.95	11.00	10.61	10.00	1.34	1.16	1.00	25 00	768
2.40	2.06	2.03	1.37	a0.66	0.37	12.23	11.00	11.18	10.00	1.05	†1.28	1.00	30 50	584
1.80	1.65	1.47	0.93	a0.54	0.33	12.31	11.00	11.29	10.00	1.02	†1.36	1.00	29 00	585
1.09	0.82	0.72	0.52	c0.20	0.37	10.04	9.00	8.22	8.00	1.82	1.26	1.00	.....	385
1.10	0.82	0.80	0.63	c0.17	0.30	10.26	9.00	8.40	8.00	1.86	1.29	1.00	21 25	356
0.92	0.82	0.72	0.49	b0.23	0.20	10.04	9.00	8.36	8.00	1.68	1.04	1.00	22 75	474
0.91	0.82	0.64	0.37	b0.27	0.27	10.18	9.00	8.39	8.00	1.19	1.01	1.00	22 00 20 00	139 730
1.00	0.82	0.74	0.47	b0.27	0.26	11.31	10.00	10.16	9.00	1.15	1.17	1.00	22 00 23 00 22 50	20 494 610
1.47	1.23	1.21	0.84	b0.37	0.26	12.05	11.00	10.75	10.00	1.30	1.07	1.00	24 50	140
0.72	0.42	0.32	0.12	c0.20	0.40	9.22	8.50	8.67	8.00	0.55	†0.68	0.50	19 00 19 00	349 705
0.88	0.83	0.51	0.34	c0.17	0.37	8.80	8.50	8.03	8.00	0.77	†0.66	0.50	19 40 20 50	350 704
1.02	1.03	0.64	0.40	c0.24	0.38	8.98	8.50	8.09	8.00	0.89	†0.74	0.50	22 00	614
1.50	0.82	0.85	0.23	b0.62	0.65	8.39	7.50	7.40	7.00	0.99	†1.17	1.00	21 20 21 50	374 561

*Deficient.

†No. 335 As muriate, 0.92%; as sulphate, 0.25%.

†No. 57 As muriate, 0.47%; as sulphate, 1.68%.

†No. 584 As muriate, 1.05%; as sulphate, 0.23%.

†No. 585 As muriate, 0.97%; as sulphate, 0.39%.

†No. 349 As muriate, 0.45%; as sulphate, 0.23%.

†No. 350 As muriate, 0.32%; as sulphate, 0.34%.

†No. 614 As muriate, 0.34%; as sulphate, 0.40%.

†No. 374 As muriate, 0.31%; as sulphate, 0.86%.

TABLE NO. II.—NITROGEN AND

Including Dissolved Bones

Chemist's Number.	Name of Manufacturer and Brand.	Sample Taken From—
	ALLENTOWN MANUFACTURING CO., ALLENTOWN, PA.	
451	Special Complete Phosphate,	Frederick & Wher, Lehighton,
674	Special $25.00 Phosphate,	Henry L. Wasman, New Tripoli,
	AMERICAN AGRICULTURAL CO, NEW YORK, N. Y.	
690	Ammoniated Fertilizer A,	I. G. Williams, Ariel,
858		Levi Berkey, Somerset,
184	Ammoniated Fertilizer, A. A.,	Theodore Gerhart, Gilberts,
371		E. E. Strickler, Wrightsville, R. D.,
575		Charles McDowell, Mansfield,
574	Ammoniated Fertilizer, A. A. A.,	Athens Produce Milling Co., Athens,
720	XXX Amoniated Fertilizer,	C. L. Shipman, Hughesville,
856	1-8-0 Ammoniated Superphosphate,	Levi Berkey, Somerset,
109	Detrick's Ammoniated Super Phosphate,	Biglerville Warehouse Co., Biglerville,
737		Grover Uffelman, Parke,
481	Diamond Wheat & Grass Special,	J. F. Goodling, Loganville,
107	Dissolved Animal Bone,	J. H. Kelley, Littlestown,
765		William H. Fritz, Berwyn,
105	W. S. Farmer & Co.'s All Crop Mixture No. 1.	J. W. Shoemaker, Littlestown, R. D.,
421		W. H. Mumma, Mechanicsburg,
420	W. S. Farmer & Co.'s All Crop Mixture No. 2.	W. H. Mumma, Mechanicsburg,
324	Homestead Good Grower,	W. B. Winey, Middleburg,
97	Peerless Wheat & Grass Special,	Zinn & Brother, York,
443		J. C. Meirley, Alexandria, R. D.,
17	Soluble Grain Mixture,	J. J. Jacobs, York Springs,
183		Theodore Gerhart, Gilberts,
391		William Mittman, Easton,
	AMERICAN FERTILIZER CO., BALTIMORE, MD.	
128	American Special Fish Guano,	Jones Evason, Christiana,
187		N. R. Yost, Myerstown,
	ARMOUR FERTILIZER WORKS, INC., BALTIMORE, MD.	
150	Armour's 1-8-0,	P. J. Oesterling & Son, Butler,
406		Wm. A. Nickels, Shippensburg,
265	Armour's 1.5-9-0,	Leir Stuckey, New Enterprise,
149	Armour's 1-10-0,	P. J. Oesterling & Son, Butler,
257		Ross P. Shaffer, Osterburg,
717		C. L. Shipman, Hughesville,
	BAUGH & SONS CO., PHILADELPHIA, PA.,	
59	Baugh's Ammoniated Superphosphate,	C. G. Updegrove, Hegins,
482		W. E. Manifold, Fawn Grove,
532		Edward Brinton & Son, West Chester,
24	Baugh's Half & Half Mixture,	Cook Grain. Feed & Supply Co., Dillsburg,
166		Samuel J. Moore, Coopersburg,
409		W. H. Fogelsonger, Shippensburg,
54	Baugh's Wheat Fertilizer for Wheat and Grass without Potash.	Morris Schwartz, Urban,
82		Robert Foreman, Centre Hall,
176		J. A. Shupp, Gilberts,
	THE BERG COMPANY, PHILADELPHIA, PA.	
617	Berg's New Special Bone Manure without Potash.	A. B. Groff, New Holland,
	D. BLOCHER & CO., GETTYSBURG, PA.,	
355	High Grade Phosphate,	D. Blocher & Co., Gettysburg,

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a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

PHOSPHORIC ACID FERTILIZERS.

and Other Like Products.

	NITROGEN.						PHOSPHORIC ACID.							
	Total.				Insoluble.		Total.		Available.		Insoluble.			
Moisture.	Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Selling price per ton at place of selection.	Chemist's Number.
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
5.18	2.07	2.25	1.55	0.82	b0.73	0.52	11.70	......	7.27	......	4.43	5.00	....	451
3.40	1.60	1.25	1.07	0.47	b0.60	0.53	11.53	......	7.26	......	4.27	4.00	25 00	674
3.37	0.94	0.82	0.56	0.37	b0.29	0.38	12.37	11.00	10.90	10.00	1.47	1.00	25 00 21 00	690 858
5.25	1.82	1.65	1.47	1.06	b0.41	0.35	12.49	11.00	10.51	10.00	1.98	1.00	..... 19 00 24 00	184 371 575
7.12	2.79	2.47	2.55	2.13	a0.42	0.24	12.32	11.00	11.34	10.00	0.98	1.00	26 00	574
4.01	1.63	1.23	1.32	0.93	b0.39	0.31	12.48	11.00	10.54	10.00	1.94	1.00	24 00	720
5.71	0.80	0.82	0.39	0.16	c0.23	0.41	11.21	9.00	10.32	8.00	0.89	1.00	20 00	856
6.10	1.74	1.65	1.15	0.64	b0.51	0.59	14.64	13.00	12.09	12.00	2.55	1.00	23 00 22 75	109 737
7.64	1.43	1.23	1.02	0.70	b0.32	0.41	12.21	11.00	10.11	10.00	2.10	1.00	21 00	481
5.03	2.31	2.06	2.02	1.67	b0.35	0.29	16.30	13.00	14.11	12.00	2.19	1.00	26 00 32 00	107 765
7.38	0.93	0.82	0.57	0.31	b0.26	0.36	12.59	11.00	10.87	10.00	1.72	1.00	....	105 421
6.86	1.63	1.65	1.16	0.74	b0.42	0.47	12.69	11.00	10.39	10.00	2.30	1.00	....	420
5.28	*1.83	2.06	1.22	0.55	b0.67	0.61	10.65	9.00	8.42	8.00	2.23	1.00	24 00	324
5.12	1.54	1.65	1.05	0.53	b0.52	0.49	10.46	9.00	8.87	8.00	1.59	1.00	21 50 21 00	97 443
4.81	0.93	0.82	0.72	0.47	b0.25	0.21	10.56	9.00	9.54	8.00	1.02	1.00	.... 16 25	17 183 391
4.50	0.87	0.82	0.70	0.36	a0.34	0.17	11.76	11.00	10.48	10.00	1.28	1.00	21 00 20 25	128 187
3.37	1.07	0.82	0.67	0.37	b0.30	0.40	9.13	8.50	8.11	8.00	1.02	0.50	20 00 18 00	150 406
2.64	1.28	1.23	0.92	0.61	b0.31	0.36	10.72	9.50	9.06	9.00	1.66	0.50	20 50	265
3.51	1.02	0.82	0.54	0.16	b0.38	0.48	11.15	10.50	10.07	10.00	1.08	0.50	22 00 20 00 22 00	149 257 717
6.57	1.41	1.02	0.89	0.56	c0.33	0.52	12.63	......	11.20	10.00	1.43	......	19 50 19 50 22 50	59 482 532
3.67	1.45	1.23	1.13	0.58	a0.55	0.32	21.54	19.00	......	......	......	......	27 50 26 00 27 50	24 166 409
7.84	1.81	1.65	1.36	1.00	b0.36	0.45	12.67	......	10.27	10.00	2.40	......	22 00 22 60 22 00	54 82 176
6.01	2.51	2.00	1.94	1.04	a0.90	0.57	13.64	11.70	9.71	......	3.93	......	27 00	617
6.80	1.83	1.65	1.53	1.12	b0.41	0.30	12.35	11.00	10.59	10.00	1.76	1.00	22 00	355

*Deficient.

TABLE NO. II.—NITROGEN AND PHOS

Chemist's Number.	Name of Manufacturer and Brand.	Sample Taken From—
	THE BOWKER FERTILIZER CO., NEW NEW YORK, N. Y.	
99	Bowker's Ammoniated 0-1-0 Phosphate,	Zinn & Brother, York, R. D.,
510		W. D. Taylor, Reedsville,
619		D. M. Witmer, Safe Harbor,
571	Bowker's Superphosphate with Ammonia 1%.	A. Bolt, Great Bend,
	CENTRAL CHEMICAL CO., HAGERSTOWN, MD.	
213	C. C. C. Bone Compound,	C. M. Bird, Meyersdale, R. D. No. 1,
423		E. W. Rupp, Shiremanstown,
517		Harry Pyle & Son, Chadd Ford Junction,
405	C. C. C. Pride of the Valley,	Wm. A. Nickels, Shippensburg,
431		Francis Baker, Everett,
35	C. C. C. Special Bone Mixture,	C. Henry Keiter, Halifax, R. No. 1,
66		S. K. Savidge, Hegins, R. D.,
555		H. E. Barclay, Somerset, R. D. No. 4,
112	C. C. C. Superior,	Biglerville Warehouse Co., Biglerville,
424		E. W. Rupp, Shiremanstown,
816		John F. Hahn, Ebensburg, R. D.,
	THE COE-MORTIMER CO., NEW YORK, N. Y.	
522	E. Frank Coe's XXV Ammoniated Phosphate 1916.	John W. Root, Kimberton,
888		King & Hoge Hardware Co., Waynesburg,
366	E. Frank Coe's Famous Prize Brand Grain and Grass Fertilizer 1916.	U. B. Stambaugh, Thomasville,
386		John Tanius, Edlemans, R. D. No. 1,
637		Walter Gongaware, Irwin,
521	E. Frank Coe's High Grade Ammoniated Superphosphate 1916.	John W. Root, Kimberton,
	COLUMBIA GUANO CO., BALTIMORE, MD.	
310	Columbia Wheat Grower,	W. P. Whitenight, Bloomsburg,
629		F. F. Dreibelbis & Co., Virginville,
790		H. H. Lykens, Jr., Martinsburg,
	THE CONSUMERS CHEMICAL CORPORATION, NEW YORK, N. Y.	
712	Consumers Pure-Sure Corn & Grain Bone Phosphate.	Lehner Brothers, Bloomsburg,
	HENRY COPE & CO., LINCOLN UNIVERSITY, PA.	
289	Wheat Grower and Complete Manure,	Lyburn Whitaker, Oxford,
	JOSIAH COPE & CO., BALTIMORE, MD.,	
868	Cope's Ammoniated Fertilizer A,	J. N. Walter, Stoystown,
	EASTERN CHEMICAL CO., NEW YORK, N. Y.	
247	Eastern Bone Compound,	John S. Musser, Oakland Mills,
	AMOS EBY & CO., LEAMAN PLACE, PA.,	
133	Pequea Ammoniated,	Clayton Rauck, Leaman Place,
132	Pequea Economy,	Clayton Rauck, Leaman Place,
	EUREKA CHEMICAL CO., BALTIMORE, MD.	
340	Eureka Dissolved Animal Base,	Ed. Urich, Myerstown,
472		Levi Kaltrider, Red Lion, R. D.,
775		R. W. Wickersham, Russellville,
845	Eureka Economy,	H. E. Huston, Saltilla,
	EUREKA FERTILIZER CO., LANCASTER, PA.	
843	Grain & Grass,	W. A. Walker, Shirleysburg, R. D.,

a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

PHORIC ACID FERTILIZERS—Continued.

	NITROGEN.						PHOSPHORIC ACID.							
	Total.				Insoluble.		Total.		Available.		Insoluble.			
Moisture.	Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Selling price per ton at place of selection.	Chemist's Number.
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
7.62	0.72	0.62	0.46	0.26	b0.20	0.26	12.19	11.00	11.23	10.00	0.96	1.00	18 00 ..... 19 00	99 510 619
2.96	1.14	0.82	0.87	0.43	a0.44	0.27	12.56	11.00	10.26	10.00	2.30	1.00	22 00	571
6.59	1.32	1.25	0.99	0.75	b0.24	0.33	15.73	......	14.71	14.00	1.02	......	23 20 23 00 23 00	213 423 517
5.37	1.16	0.82	0.88	0.69	b0.19	0.28	10.72	......	9.89	10.00	0.83	......	19 00 20 00	405 431
6.32	1.80	1.65	1.29	0.89	b0.40	0.51	11.74	......	10.27	10.00	1.47	......	26 60 ..... 21 00	35 66 555
5.50	1.03	0.82	0.68	0.36	b0.32	0.35	14.01	......	12.73	12.00	1.28	......	20 00 20 00 19 50	112 424 816
3.97	1.05	0.82	0.64	0.33	b0.31	0.41	11.95	11.00	10.80	10.00	1.15	1.00	22 00 25 00	522 883
3.90	0.96	0.82	0.51	0.23	c0.28	0.45	10.38	9.00	9.07	8.00	1.31	1.00	17 81 17 50 23 00	366 386 637
3.19	2.74	2.47	2.43	1.75	a0.68	0.31	12.34	11.00	10.94	10.00	1.40	1.00	24 00	521
5.69	1.03	0.82	0.70	0.47	b0.23	0.33	11.12	10.50	10.99	10.00	0.13	0.50	19 35 18 50 20 00	310 629 790
7.68	1.92	1.65	1.67	0.90	a0.77	0.25	14.84	13.00	12.99	12.00	1.85	1.00	24 00	712
11.22	2.51	2.47	2.15	1.71	b0.44	0.36	14.38	......	12.45	......	1.93	......	26 00	289
3.58	1.04	0.82	0.68	0.37	b0.31	0.36	12.87	11.00	11.19	10.00	1.68	1.00	21 00	868
6.04	1.68	1.65	1.26	0.92	b0.34	0.42	11.31	......	10.29	10.00	1.02	......	23 60	247
10.69	1.18	1.03	0.73	0.35	b0.38	0.45	12.54	12.00	10.58	10.00	1.96	2.00	20 00	133
8.71	2.10	2.06	1.46	0.59	b0.87	0.64	12.58	12.00	*9.47	10.00	3.11	2.00	24 00	132
3.37	1.37	1.24	1.08	0.80	b0.28	0.29	9.82	9.50	8.86	9.00	0.96	0.50	..... 21 00 19 27	340 472 775
1.91	0.63	0.62	0.40	0.22	b0.18	0.23	7.36	7.50	7.19	7.00	0.17	0.50	18 00	845
2.70	0.90	0.82	0.67	0.41	b0.26	0.23	12.89	11.00	*8.61	10.00	4.28	1.00	20 00	843

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*Deficient.

TABLE NO. II.—NITROGEN AND PHOS

Chemist's Number.	Name of Manufacturer and Brand.	Sample Taken From—
	FARMERS FERTILIZER & FEED CO., WEST MINSTER, MD.	
404	Carroll Phosphate,	J. D. Garman, Shippensburg,
403	Indian Chief,	J. D. Garman, Shippensburg,
	FARMERS FERTILIZER WORKS, ELIZABETHTOWN, PA.	
39	Farmers Club Brand,	Brown Stone Store Co., Hummelstown,
593		B. F. Horting, Newport,
31	Farmers Crop Grower,	John Sheets, Elizabethville,
325		Stringinger Brothers, Middleburg,
29	Farmers Golden Sheaf,	John Sheets, Elizabethville,
412		C. Alvin Fogelsonger, Shippensburg,
615		M. S. Graybill & Son, Bareville,
	JOSEPH R. GAWTHROP, KENNETT SQUARE, PA.	
282	Ammoniated Special Phosphate for Corn, Oats & Wheat.	Joseph R. Gawthrop, Kennett Square,
283	Champion Fertilizer for Wheat and Grass,	Joseph R. Gawthrop, Kennett Square,
	GRIFFITH & BOYD COMPANY, BALTIMORE, MD.	
127	Farmers Bone Mixture,	W. M. Chamberlin, Christiana,
315		D. W. & H. W. Grove, Catawissa,
390	Fish and Bone Mixture,	A. C. Carr, Edlemans, R. D. No. 1,
835		Diller Ranck, New Holland,
42	Peerless Mixture,	H. J. Webner, Harrisburg, R. No. 1,
144		Frank Kiskaddon, Kittanning, R. No. 4,
496		J. W. Hostetler, Walnut,
22	Queen Guano,	J. B. Spera, Dillsburg,
606		C. F. Gelbach, Duncannon,
723		Artley Brothers, Muncy,
	S. M. HESS & BROTHER, INC., PHILADELPHIA, PA.	
178	Standard Superphosphate,	W. J. Newhart, Saylorsburg,
	M. P. HUBBARD & CO., BALTIMORE, MD.,	
489	Hubbard's Grain and Grass,	J. P. Schuchort, New Freedom,
	INTERNATIONAL AGRICULTURAL CORPORATION, BUFFALO FERTILIZER WORKS, BUFFALO, N. Y.	
588	Buffalo Farmers Choice,	C. E. Rauscher, Blossburg,
641		William McCunn, Clymer, R. D. No. 1,
	KEYSTONE BONE FERTILIZER CO., PHILADELPHIA, PA.	
49	1916 Keystone Ammoniated Superphosphate,	Charles Schoffstall, Valley View,
394		Wm. H. Hoffman, New Tripoli,
316	1916 Keystone Economy Grain Compound,	E. A. Slagle, Paxinos,
393		Wm. H. Hoffman, New Tripoli,
205	1916 Keystone Special Pennsylvania Grain Mixture.	A. B. Bomgardner, Palmyra,
	KEYSTONE GRANGE EXCHANGE, MANSFIELD, PA.	
578	Grangers Brand,	Lynn H. Hall, Mansfield,
	LANCASTER BONE FERTILIZER CO., LANCASTER, PA.	
330	Corn, Grass and Wheat Special,	Aaron Vogt, Prescott,
744		Adam Shenberger, Dallastown,
791		Jerry Kensinger, Martinsburg,
792	Lancaster Favorite,	Ira Bechtal, Roaring Spring,

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a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

PHORIC ACID FERTILIZERS—Continued.

	NITROGEN.						PHOSPHORIC ACID.							
	Total.				Insoluble.		Total.		Available.		Insoluble.			
Moisture.	Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Selling price per ton at place of selection.	Chemist's Number.
%	.%	%	%	%	%	%	%	%	%	%	%	%	$	
3.78	0.60	0.41	0.36	0.24	c0.12	0.24	8.57	9.00	8.16	8.00	0.41	1.00	....	404
5.40	0.91	0.82	0.74	0.57	b0.17	0.17	12.41	12.00	12.03	11.00	0.38	1.00	....	403
7.75	2.30	2.47	1.47	0.84	b0.63	0.83	10.68	9.00	8.58	8.00	2.10	1.00	..... 23 50	39 593
7.45	1.11	0.82	0.53	0.19	c0.34	0.58	9.81	9.00	8.85	8.00	0.96	1.00	18 00 19 00	31 225
5.88	1.59	1.65	0.96	0.52	b0.44	0.63	12.63	11.00	11.10	10.00	1.53	1.00	21 50 22 50 21 50	29 412 615
7.84	1.81	1.25	0.92	0.33	b0.59	0.89	8.52	6.00	7.16	5.00	1.36	1.00	24 00	282
5.85	2.90	1.50	2.60	2.30	b0.30	0.30	8.39	6.00	7.33	4.00	1.06	2.00	26 00	283
6.77	1.83	1.65	1.26	0.86	b0.40	0.57	11.88	10 00	9.46	9.00	2.42	1.00	23 00 21 75	127 315
3.84	1.96	1.50	1.29	0.71	b0.58	0.67	10.37	8.00	8.39	7.00	1.98	1.00	19 00 23 00	390 835
3.67	0.56	0.41	0.29	0.14	c0.15	0.27	12.12	9.00	9.38	8.00	2.74	1.00	16 50 22 40	42 144 496
4.49	0.91	0.85	0.62	0.40	b0.22	0.29	9.43	10.00	8.92	9.00	0.51	1.00	20 00 19 00 21 50	22 606 723
9.41	1.02	0.82	0.80	0.48	b0.32	0.22	12.37	11.00	10.85	10.00	1.52	1.00	18 00	178
2.69	0.72	0.62	0.43	0.31	c0.12	0.29	8.80	8.50	7.72	7.00	1.08	1.50	17 00	489
2.94	1.16	0.80	0.86	0.50	b0.36	0.30	11.99	......	10.78	10.00	1.21	......	25 00 22 50	588 641
7.65	1.80	1.65	1.35	0.89	b0.46	0.45	13.10	12.00	10.93	10.00	2.17	2.00	...... 23 00	49 394
4.39	1.15	0.82	0.74	0.46	b0.28	0.41	11.01	9.00	9.19	8.00	1.82	1.00	19 00 19 00	316 393
12.10	1.24	0.82	1.15	0.99	a0.16	0.09	15.08	14.00	13.87	12.00	1.21	2.00	....	205
3.71	1.03	0.82	0.90	0.55	a0.35	0.13	12.26	11.00	11.37	10.00	0.89	1.00	18 24	578
4.77	1.03	0.82	0.64	0.41	c0.23	0.39	13.37	11.00	11.71	10.00	1.66	1.00	..... 22 00 24 00	330 744 791
9.54	1.61	1.60	1.08	0.72	b0.36	0.53	11.61	11.00	10.07	10.00	1.54	1.00	26.00	792

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*Deficient.

TABLE NO. II.—NITROGEN AND PHOS

Chemist's Number.	Name of Manufacturer and Brand.	Sample Taken From—
	THE LANCASTER CHEMICAL CO., LANCASTER, PA.	
287	No. 5 Flag Brand Superphosphate,	Howard M. Long, Oxford,
623	No. 15 General Crop Special,	H. H. Yost, Sinking Springs,
698		Elias Morgan, Pine Grove, R. D. No. 2,
699	Rising Sun Animal Bone Phosphate,	Elias Morgan, Pine Grove, R. D. No. 2,
46	No. 18 Success Brand,	J. L. Royer, Myerstown, R. No. 2,
334		Brubaker & Espenshade, Middletown,
622	No. 14 Wheat and Grass Special,	H. H. Yost, Sinking Springs,
684		Charles Bieler, Trexlertown,
	LISTER'S AGRICULTURAL CHEMICAL WORKS, NEWARK, N. J.	
52	Lister's Lucky Strike Guano,	J. C. Boyer, Klingerstown,
497		Harry Garbrick, Bellefonte,
511		R. K. Yoder, Belleville,
486	Lister's Crescent Ammoniated Superphosphate 1916.	A. M. Grove & Co., Muddy Creek Forks,
53	Lister's Soil Improver,	J. C. Boyer, Klingerstown,
209		S. J. Ringler, Elk Lick, R. D. No. 1,
724		George B. Fry, Muncy, R. D. No. 3,
417	Lister's 2-12-0 Fertilizer,	J. W. Miller, Mechanicsburg,
485		A. M. Grove & Co., Muddy Creek Forks.
505		T. B. Harshberger, Mattawan,
	THE FREDERICK LUDLAM CO., BALTIMORE, MD.	
368	Ludlam's Cecrops Fertilizer Bone Manure,	Eml. Hoffman, Dover, R. D.,
814		Schetty Brothers, Ebensburg,
18	Ludlam's Cecrops Fertilizer Wheat Mixture.	Amos F. Bushey, York Springs,
229		N. B. Shober, Garret,
813		Schetty Brothers, Ebensburg,
	THE MAPES FORMULA & PERUVIAN GUANO CO., NEW YORK, N. Y.	
649	Mapes Cereal Brand (War Special),	Henry S. Beidler, Doylestown,
650	Mapes General Crop (War Special),	Henry S. Beidler, Doylestown,
	MARTIN'S FERTILIZER CO., PHILADELPHIA, PA.	
124	Martin's Ammoniated Phosphate,	Francis Shoemaker, Quarryville, R. D.,
164		Edwin Houck, Bangor,
748		J. C. Leib & Co., Stewartstown,
23	Martin's Crop Producer,	Cook Grain, Feed & Supply Co., Dillsburg,
301		Harry Pyle & Son, Chadds Ford Junction,
643		Seibert & Garraux, Allison Park,
697	Martin's Pure Dissolved Animal Matter,	John Reed, Cresson, R. D.,
747	Martin's Two-Eight,	J. C. Leib & Co., Stewartstown,
	THE MILLER FERTLIZER CO., BALTIMORE, MD.	
290	M. B. S.,	M. T. Harkins, Hickory Hill,
364		E. E. Bare, Bears,
735		Hartley & Blaine, Turbotsville, R. No. 1,
255	Miller's No. 1 Special,	D. B. Esh, Spruce Hill,
292		M. T. Harkins, Hickory Hill,
733		Hartley & Blaine, Turbotsville, R. No. 1,
291	Miller's No. 2 Special,	M. T. Harkins, Hickory Hills,
332		C. R. Bucher, Myerstown, R. No. 4,
734		Hartley & Blaine, Turbotsville,
	G. OBER & SONS CO., BALTIMORE, MD.	
729	Ober's Sun Beam Guano,	H. V. Smith, Turbotsville, R. D. No. 1,
	OXFORD PACKING WORKS, OXFORD, PA.	
774	O. P. W. No. 1,	H. H. Miller, Collamer,
773	O. P. W. No. 2,	H. H. Miller, Collamer,
	OYLER & SPANGLER, GETTYSBURG, PA.	
114	Special,	Biglerville Warehouse Co., Biglerville,
113	Superphosphate,	Biglerville Warehouse Co., Biglerville,

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a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

PHORIC ACID FERTILIZERS—Continued.

Moisture.	NITROGEN.						PHOSPHORIC ACID.						Selling price per ton at place of selection.	Chemist's Number.
	Total.		Available.	Water soluble.	Insoluble.		Total.		Available.		Insoluble.			
	Found.	Guaranteed.			Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.		
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
7.69	1.07	1.23	0.93	0.73	b0.20	0.14	12.23	11.00	*9.68	10.00	2.55	1.00	23 00	287
5.42	1.50	1.65	1.16	0.83	b0.33	0.34	14.61	13.00	12.89	12.00	1.72	1.00	22 00 23 00	623 698
7.14	2.38	2.47	2.13	1.69	a0.44	0.25	15.45	13.00	12.75	12.00	2.70	1.00	25 75	699
7.15	0.99	0.82	0.87	0.62	a0.25	0 12	13.46	13.00	12.38	12.00	1.08	1.00	25 75 22 00	46 334
2.73	0.99	0.82	0.59	0.34	c0.25	0.40	12.94	11.00	*8.90	10.00	4.04	1.00	18 00	622 684
5.36	1.76	1.65	1.31	0.78	b0.53	0.45	10.68	9.00	8.73	8.00	1.95	1.00	22 50 ..... 21 75	52 497 511
7.87	1.75	1.65	1.27	0.82	b0.45	0.48	12.73	11.00	10.14	10.00	2.59	1.00	22 25	486
5.29	1.21	0.82	0.93	0.59	b0.34	0.28	10.77	9.00	9.43	8.00	1.34	1.00	19 25 20 00 16 65	53 209 724
7.35	1.66	1.65	1.19	0.72	b0.47	0.47	14 09	13.00	12.05	12.00	2.04	1.00	23 50 23 25	417 485 505
5.00	1.02	0.82	0.57	0.27	b0.30	0.45	9.62	9.00	8.47	8.00	1.15	1.00	20 00 21 00	368 814
5.24	1.50	1.65	1.10	0.64	b0.46	0.40	10.79	9.00	9.45	8.00	1.34	1.00	..... 22 00 24 00	18 229 813
7.56	2.57	2.47	2.17	1.89	b0.28	0.40	9.64	8.00	*5.11	6.00	4.53	2.00	30 00	649
9.53	2.04	1.65	1.64	1.37	c0.27	0.40	10.42	9.00	8.19	8.00	2.23	1.00	27 00	650
7.44	1.49	1.65	0.87	0.54	c0.33	0.62	11.29	......	*9.70	10.00	1.59	......	22 50 16 00 22 00	124 164 748
5.87	1.10	1.03	0.55	0.23	c0.32	0.55	13.32	......	10.90	10.00	2.42	......	19 50 20.00 24 00	23 301 643
5.89	1.90	1.65	1.51	1.04	b0.47	0.39	14.02	......	11.81	12.00	2.21	......	....	697
5.16	1.58	1.65	1.07	0.65	b0.42	0.51	11.42	......	8.61	8.00	2.81	......	21 00	747
1.67	0.88	0.62	0.57	0.36	c0.21	0.31	7.49	7.50	7.23	7.00	0.26	0.50	21 00 15 00 17 50	290 364 735
4.34	1.74	1.65	1.40	1.05	b0.35	0.34	11.30	10.50	10.15	10.00	1.15	0.50	21 50 26 00 22 50	255 292 733
2.88	1.11	1.03	0.77	0.56	c0.21	0.34	9.12	8.50	8.55	8.00	0.57	0.50	23 00 ..... 19 00	291 332 734
6.91	1.69	1.65	1.03	0.50	b0.53	0.66	12.19	11.00	10.56	10.00	1.63	1.00	22 75	729
5.45	3.05	2.47	2.14	1.17	b0.97	0.91	11.97	......	8.56	8.00	3.41	......	27 00	774
7.16	1.84	1.44	1.06	0.33	b0.73	0.78	12.34	......	10.09	9.00	2.25	......	25 00	773
7.83	1.59	1.65	1.11	0.48	b0.63	0.48	14.91	14.00	11.94	11.00	2.97	2.00	23 00	114
4.27	1.25	0.82	0.72	0.30	b0.42	0.53	11.65	10.00	9.94	8.00	1.71	2.00	18 00	113

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*Deficient.

TABLE NO. II.—NITROGEN AND PHOS

Chemist's Number.	Name of Manufacturer and Brand.	Sample Taken From—
	PATAPSCO GUANO CO., BALTIMORE, MD.	
252	Patapsco Golden Crop Fertilizer 1916, ...	J. H. Harley, Thompsontown, ...
476		Jonothon Geesey, Dallastown, ...
586		Oscar Van Buskirk, Bald Mount, ...
567	Patapsco Hay Maker Superphosphate, ...	Summit Lumber Co., Clarks Summit, ...
162	Patapsco Truckers Delight, ...	Charles Schimmel, Ackermanville, ...
569		Summit Lumber Co., Clarks Summit, ..
	PIEDMONT MT. AIRY GUANO CO., BALTIMORE, MD.	
220	Piedmont Utility Fertilizer, ...	James Maust, Elk Lick, R. D. No. 1, ...
	THE POLLOCK FERTILIZER CO., BALTIMORE, MD.	
739	The Pollock Fertilzer Co.'s Grain Special,	F. W. Shenberger, Red Lion, R. D., ...
11	The Pollock Fertilizer Co.'s Our Brand Guano.	J. J. Bradley, Mercersburg, ...
244		Fred Albaugh, McAllisterville, ...
432		Francis Baker, Everett, ...
	RASIN-MONUMENTAL CO., BALTIMORE, MD.	
557	Rasin's Grain & Grass Ammoniated Superphosphate.	C. Miller & J. W. Lavan, Somerset, R. D. No. 4.
556	Rasin's Special Crop Preparation, ...	C. Miller & J. W. Lavan, Somerset, R. D. No. 4.
597	Rasin's Special Fish & Bone Guano, ...	J. W. Fleisher, Wila, ...
678		Edwin Seibold, Slatington, R. D. No. 1,
708		H. B. Low & Son, Orangeville, ...
	READING BONE FERTILIZER CO., READING, PA.	
462	Animal Tankage Mixture, ...	John A. Bond, Nescopeck, ...
673		Fred L. Pfeifly, Lynnport, ...
825		Thomas Faust, Bernville, ...
115	Dissolved Animal Matter, ...	G. C. Myers, Gardners, ...
156		Krause & Freehling, Marwood, ...
399		Fred L. Pfeifly, Lynnport, ...
353	Never Fail Crop Grower, ...	G. A. Myers, Gardners, ...
696		Thomas Worman, Bath, ...
893		A. M. Frederick, Jr., Fairchance, ...
116	Reading Special Grain & Grass Producer,	G. C. Myers, Gardners, ...
686		George Moore, Orefield, ...
757		W. W. Moses, Exton, ...
	READING CHEMICAL CO., READING, PA.	
280	Farmers Favorite, ...	Everett Hardware Co., Everett, ...
706		W. W. Parker, Rohrsburg, R. D. No. 1,
842		John Engeart, Shirleysburg, R. D., ...
	ROBERT REICHARD, ALLENTOWN, PA.	
392	American Eagle Phosphate, ...	James Bachman, Schnecksville, ...
	REICHARD HIDE & TALLOW CO., ASHLAND, PA.	
466	Farmers Choice, ...	Lakeside Grange, John Kunkle, Secy., Mahanoy City, R. D.
	F. S. ROYSTER GUANO CO., BALTIMORE, MD.	
688	Royster's Flamingo Ammoniated Superphosphate.	I. G. Williams, Ariel, R. D. No. 1, ...
78	Royster's Penguin Ammoniated Superphosphate.	J. H. Ross, Lenden Hall, ...
488		J. F. & H. Newhous, Glen Rock, ...
682		O. W. Bastian, Wescosville, ...
8	Royster's Wheat Grower, ...	J. A. Witherspoon & Sons, Mercersburg,
34		J. W. Seiders, Halifax, R. No. 2, ...
64		Ottis Rehrer, Pine Grove, R. D., ...
61	Royster's Wheat & Grass Special, ...	Thomas Kuntzleman, Tower City, R. D.,
526		Harvey L. Moses, Chester Springs, ...
680		O. W. Bastian, Wescosville, ...

a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.
†Exluded from Average.

PHORIC ACID FERTILIZERS—Continued.

	NITROGEN.						PHOSPHORIC ACID.							
	Total.				Insoluble.		Total.		Available.		Insoluble.			
Moisture.	Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Selling price per ton at place of selection.	Chemist's Number.
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
6.85	1.75	1.65	1.26	0.75	b0.51	0.49	12.23	11.00	10.06	10.00	2.17	1.00	22 00 21 00	252 476 586
†7.49	†6.63	6.58	†6.35	5.26	a1.09	0.28	†8.98	9.00	†8.62	8.00	†0.36	1.00	†43 25	567
3.22	2.56	2.47	2.12	1.44	a0.68	0.44	12.23	11.00	10.95	10.00	1.28	1.00	25 00 28 00	162 569
11.08	1.71	1.65	1.13	0.71	b0.42	0.58	11.41	......	10.45	10.00	0.96	......	23 27	220
7.20	1.70	1.65	1.37	0.93	b0.44	0.33	11.28	9.00	9.49	8.00	1.79	1.00	20 00	739
6.29	1.09	0.82	0.71	0.40	b0.31	0.38	10.50	9.00	8.71	8.00	1.79	1.00	18 50 17 75 20 00	11 244 432
4.59	1.05	0.82	0.85	0.59	b0.26	0.20	15.80	13.00	13.36	12.00	2.44	1.00	19 60	557
4.33	1.73	1.65	1.50	1.19	b0.31	0.23	11.98	11.00	10.79	10.00	1.19	1.00	21 00	556
3.75	1.76	1.65	1.30	0.62	b0.68	0.46	13.85	12.00	11.63	11.00	2.17	1.00	..... 22 00 22 75	597 678 708
6.14	1.87	1.64	1.62	1.28	b0.34	0.25	17.08	15.00	14.40	14.00	2.68	1.00	25 50 25.00 24 50	462 673 825
3.84	1.06	0.82	0.93	0.71	a0.22	0.13	13.16	11.00	10.33	10.00	2.83	1.00	18 50 23 00 20 00	115 156 399
2.20	0.92	0.82	0.67	0.35	b0.32	0.25	13.13	11.00	10.07	10.00	3.06	1.00	18 50 21 00 22 00	353 696 893
3.05	0.96	0.82	0.87	0.61	a0.26	0.09	9.75	8.00	8.12	7.00	1.63	1.00	17 00 ..... 22 00	116 686 757
4.95	1.20	0.82	0.86	0.56	b0.30	0.34	11.80	11.00	10.21	10.00	1.59	1.00	21 00 18 54 20 00	280 706 842
3.73	1.46	1.64	0.87	0.31	b0.56	0.59	12.02	10.00	10.48	9.00	1.54	1.00	....	392
4.86	2.10	1.65	1.36	0.44	b0.92	0.74	14.22	......	11.16	10.00	3.06	......	....	466
2.39	2.12	2.06	1.81	1.47	b0.34	0.31	11.35	12.50	*10.92	12.00	0.43	0.50	26 00	688
4.92	1.80	1.65	1.44	0.99	b0.45	0.36	11.90	10.50	11.07	10.00	0.83	0.50	23 50 23 00 21 00	78 488 682
7.53	1.02	0.82	0.76	0.57	b0.19	0.26	11.35	10.50	11.06	10.00	0.29	0.50	20 00 19 25 20 00	8 34 64
6.93	2.20	2.06	1.83	1.14	a0.69	0.37	14.16	12.50	13.52	12.00	0.64	0.50	26 50 27 00 23 50	61 526 680

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*Deficient.

TABLE NO. II.—NITROGEN AND PHOS

Chemist's Number.	Name of Manufacturer and Brand.	Sample Taken From—
	SCHAAL-SHELDON FERTILIZER CO., BUFFALO, N. Y.	
158	Ammoniated Superphosphate No. 4,	J. R Houston, Harrisville,
	SWIFT & COMPANY, INC., BALTIMORE, MD.	
576	Swift's Pure Diamond "C" Grain Fertilizer.	Charles W. Early, Mansfield,
577	Swift's Pure Red Steer,	Charles W. Earley, Mansfield,
695		James R. Hummel, Bethlehem,
638	Swift's Pure Special Baltimore Formula,	M. C. Stewart, Indiana, R. D. No. 4,
221	Swift's Pure Special Corn Grower,	Joseph Livingood, Elk Lick, R. D. No. 1,
631		John H. Weaver, East Earl, R. No. 2,
630	Swift's Pure Special Formula B,	John H. Weaver, East Earl, R. No. 2,
93	Swift's Pure Special Formula D,	Brillinger & Swartz, Emigsville,
322		W. B. Winey, Middleburg,
852		J. A. Witherspoon & Sons, Mercersburg,
	J. M. TEMPLIN, HONEYBROOK, PA,.	
294	No. 4 Atlas Brand,	J. M. Templin, Honeybrook,
	I. P. THOMAS & SON CO., PHILADELPHIA, PA.	
250	Farmer's Choice Fertilizer,	L. S. Kinzer, Mifflintown,
342		Ed. Shuey, Annville, R. No. 2,
808	Thomas' Wheat & Corn Guano,	Keystone Hardware Co., Reynoldsville,
	TRENTON BONE FERTILIZER CO., TRENTON, N, J.	
661	Bone & Tankage,	L. A. Howells, Morrisville,
663	4-8 Potato,	L. A. Howells, Morrisville,
662	Special Grain,	L. A. Howells, Morrisville,
	F. W. TUNNEL & CO., INC., PHILADELPHIA, PA.	
170	1916 Excelsior Phosphate,	Alfred Kahler, Easton, R. D. No. 3,
281	Wheat Grower,	H. A. Mendenhall, Toughkenamon,
669		Wm. B. Passmore, Embreeville,
	J. E. TYGERT CO., PHILADELPHIA, PA.	
383	Ammoniated Fertilizer AA,	Robert S. Brown, Easton, R. D. No. 1,
	THE UNION CHEMICAL WORKS, INC., NORTH WALES, PA.	
656	Three-Ten Mixture,	Elias M. Yost, Perkasie, R. F. D.,
657	Two-Eight Mixture,	Elias M. Yost, Perkasie, R. F. D.,
	VIRGINIA-CAROLINA CHEMICAL CO., RICHMOND, VA.	
433	V. C. C. Co.'s Electric Ammoniated Superphosphate.	John S. Hershberger, Everett,
381	V. C. C. Co.'s Fish & Bone Mixture,	Lewis Graver, Easton, R. D. No. 1,
382	V. C. C. Co.'s Special Crop Formula,	Lewis Graver, Easton, R. D. No. 1,
851	V. C. C. Co.'s Star Superphosphate,	Howard Weld, McConuellsburg,
	THE ROBERT A. WOOLRIDGE O., BALTIMORE, MD.	
266	Woolridge's General Crop Grower,	Adam Beach, New Enterprise,
732		H. V. Smith, Turbotsville, R. D. No. 1,
19	Woolridge's Special Wheat & Grass Grower.	Robert Wentz, Rossville,
267		V. A. Stufft, Imler,
297		Milhous Brothers, Mendenhall,
	YORK CHEMICAL WORKS, YORK, PA.	
12	Dempwolf's Crop Grower,	C. F. Fendrick, Mercersburg,
560		H. E. Barkman, Rockwood, R. D. No. 2,
759		Walter F. Bracken, Paoli,
558	Dempwolf's Prosperity,	H. E. Barkman, Rockwood, R. D. No. 2,

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a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

PHORIC ACID FERTILIZERS—Concluded.

	NITROGEN.						PHOSPHORIC ACID.							
	Total.				Insoluble.		Total.		Available.		Insoluble.			
Moisture.	Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Selling price per ton at place of selection.	Chemist's Number.
%	%	%	%	%	%	%	%	%	%	%	%	%	$	
4.50	3.26	3.29	3.01	2.37	a0.64	0.25	11.45	11.00	10.01	10.00	1.44	1.00	33 00	158
3.05	0.99	0.82	0.57	0.36	c0.21	0.42	9.40	......	*7 77	8.00	1.63	......	20 00	576
4.57	*1.44	1.65	0.97	0.58	b0.39	0.47	9.57	......	8.17	8.00	1.40	......	24 00	577 695
3.65	3.21	3.29	2.27	1.49	b0.78	0.94	11.42	......	10.04	10.00	1.38	......	31 00	638
3.92	1.84	1.65	1.28	0.90	b0.38	0.56	11.58	......	10.43	10.00	1.15	......	23 21 21 00	221 631
3.40	1.85	1.65	1.55	1.21	b0.34	0.30	14.69	......	14.18	14.00	0.51	......	22 00	630
3.52	1.18	0.82	0.68	0.40	c0.28	0.50	10.03	......	9.01	9.00	1.02	......	19 00 20 00 20 00	93 392 852
8.45	1.59	1.65	1.34	1.15	b0.19	0.25	12.40	11.00	*9.72	10.00	2.68	1.00	23 00	294
4.52	2.50	2.45	2.02	1.52	b0.50	0.48	12.68	10.50	11.60	10.00	1.08	0.50	..... 25 75	250 342
3.39	2.31	1.65	1.91	1.18	a0.73	0.40	12.21	10.50	10.45	10.00	1.76	0.50	26 00	808
5.04	2.24	2.06	1.78	0.97	a0.81	0.46	15.63	9.00	9.15	8.00	6.48	1.00	24 00	661
7.08	3.19	3.28	2.77	2.00	a0.77	0.42	12.81	9.00	11.62	8.00	1.19	1.00	30 00	663
5.31	1.86	1.64	1.53	0.74	a0.79	0.33	12.93	9.00	11.12	8.00	1.81	1.00	23 00	662
8.00	1.07	0.82	0.79	0.54	b0.25	0.28	8.60	7.00	6.97	6.00	1.63	1.00	17 00	170
5.28	1.26	0.82	0.82	0.53	b0.29	0.44	11.57	10.00	10.10	9.00	1.47	1.00	24 00 23 00	281 669
7.19	1.59	1.65	1.20	0.74	b0.46	0.39	12.21	11.00	10.56	10.00	1.65	1.00	23 50	383
6.74	2.50	2.46	2.28	1.96	b0.32	0.22	11.14	......	9.86	10.00	1.28	......	25 00	656
2.70	1.69	1.64	1.43	1.15	b0.28	0.26	9.68	......	8.02	8.00	1.66	......	20 00	657
6.62	1.05	0.82	0.88	0.61	a0.27	0.17	15.31	13.0	13.52	12.00	1.79	1.00	22 00	433
5.85	1.62	1.65	1.34	0.91	a0.43	0.28	13.81	12.00	11.65	11.00	2.16	1.00	16 00	381
5.21	1.81	1.65	1.49	1.17	b0.32	0.32	11.71	11.00	10.78	10.00	0.93	1.00	23 00	382
2.78	0.42	0.41	0.33	0.18	a0.15	0.09	10.57	9.00	9.29	8.00	1.28	1.00	16 00	851
5.65	0.96	0.82	0.42	0.05	b0.37	0.54	10.31	9.00	8.65	8.00	1.66	1.00	18 00 18 75	266 732
6.68	1.37	1.23	0.98	0.63	b0.35	0.39	12 16	11.00	10.63	10.00	1.53	1 00	20 00 20 00 21 00	19 267 297
4.63	1.01	0.82	0.74	0.58	c0.16	0.27	11.81	10.50	10.22	10.00	1.59	0.50	18 00 18 80 20 00	12 560 759
2.84	1.96	1.65	1.57	1.29	b0.28	0.39	14.04	12.50	12.32	12.00	1.72	0.50	22 75	558

*Deficient.

TABLE NO. III.—GROUND

Furnishing Nitrogen

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—
	THE AMERICAN AGRICULTURAL CHEMICAL CO., NEW YORK, N. Y.	
864	High Grade Ground Bone,	Newton Gonder, Boswell, R. D. No. 1,
	ARMOUR FERTILIZER WORKS, INC., BALTIMORE, MD.	
448	Armour's Bone Meal 3-22,	Ralph Gregory, Petersburg,
	BAUGH & SONS CO., PHILADELPHIA, PA.	
157	Baugh's Fine Ground Bone,	O. W. Luck, Zelienople,
271		Edgar Hartle, Osterburg, R. D.,
726		Adolph Boettinger, Danville,
	THE BERG CO., PHILADELPHIA, PA.	
760	Berg's Raw Bone Fine,	Walter F. Bracken, Paoli,
	CAMBRIA FERTILIZER CO., JOHNSTOWN, PA.	
812	Pure Fine Ground Bone Dust,	Cambria Fertilizer Co., Johnstown,
878		Claude Davis, Windber,
	THE COE-MORTIMER CO., NEW YORK, N. Y.	
885	Fine Ground Bone,	J. G. Cover, Mastontown,
	JACOB DOLD PACKING CO., BUFFALO, N. Y.	
716	Dold Quality Bone Meal,	Gheen, Spigelmyer & Phleger, Antes Fort,
	GRIFFITH & BOYD CO., BALTIMORE, MD.	
314	Soft Ground Bone Meal,	D. W. & H. W. Grove, Catawissa,
836	Pure Fine Ground Bone Meal,	Diller Ranck, New Holland,
	LISTERS AGRICULTURAL CHEM. WORKS, NEWARK, N. J.	
210	Listers Bone Meal 1916,	S. J. Ringler, Elk Lick, R. D. No. 1,
764		William H. Fritz, Berwyn,
805		T. R. Krug, Ashville,
	MARTIN FERTILIZER CO., PHILADELPHIA, PA.	
304	Martin's Pure Raw Bone Meal,	Harry Pyle & Son, Chadds Ford Junction,
	ROBERT A. REICHARD, ALLENTOWN, PA.	
169	Raw Bone Meal,	E. J. Gerlach, Bethlehem,
	SWIFT & COMPANY, INC., BALTIMORE, MD.	
535	Swift's Pure Bone Meal,	W. J. Pratt & Son, Wawaset,
639		M. C. Stewart, Indiana, R. D. No. 4,
	I. P. THOMAS & SON CO., PHILADELPHIA, PA.	
640	Pure Ground Bone,	John S. Ortner, Indiana, R. D. No. 3,
	THE UNION CHEMICAL WORKS, INC., NORTH WALES, PA.	
658	Bone Meal,	Elias M. Yost, Perkasie, R. F. D.,
	EMIL WAHL MANUFACTURING CO., PHILADELPHIA, PA.	
284	Emil Wahl's warranted Pure Philadelphia Button Bone Meal.	S. K. Chambers & Bro., Elk View,
	YORK CHEMICAL WORKS, YORK, PA.	
479	Dempwolf's Pure Ground Bone,	Dover Co-operative Association, Dover,

BONE FERTILIZERS.

and Phosphoric Acid.

Moisture.	Chemical Analysis.				Mechanical Analysis.		Selling price per ton at place of selection.	Chemist's number.
	Nitrogen.		Phosphoric Acid.					
	Found.	Guaranteed.	Found.	Guaranteed.	Fine.	Coarse.		
Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.		
6.63	4.14	3.29	22.18	20.59	64.00	36.00	....	864
3.22	2.61	2.47	23.93	22.00	65.00	35.00	$35.00	448
5.47	2.51	2.47	18.65	16.49	71.00	29.00	38.00 34.50 37.00	157 271 726
4.50	3.28	3.00	*20.19	22.00	52.00	48.00	40.00	760
3.37	*2.54	3.00	26.57	20.00	70.00	30.00	35.00 36.00	812 878
3.49	2.79	2.47	23.97	22.88	49.00	51.00	35.00	885
4.13	2.85	2.47	25.96	23.00	78.00	22.00	34.00	716
3.52	3.26	2.50	13.70	11.00	66.00	34.00	33.00	314
5.04	3.68	3.30	*20.00	22.00	64.00	36.00	37.00	836
3.34	2.86	2.47	23.66	23.00	65.00	35.00	.... 44.00 38.00	210 764 805
5.40	4.06	3.70	22.11	21.00	50.00	50.00	40.00	304
7.45	3.88	3.70	24.49	23.00	28.00	72.00	50.00	169
4.85	2.60	2.47	28.00	24.00	76.00	24.00	36.00 37.00	535 639
3.50	2.71	2.46	25.03	23.00	52.00	48.00	38.00	640
3.78	2.57	2.46	24.87	22.00	68.00	32.00	35.00	658
12.37	2.62	2.58	24.85	22.60	84.00	16.00	40.00	284
3.52	2.75	2.47	24.07	23.00	53.00	47.00	34.00	479

*Deficient.

TABLE No. IV.—ACIDULATED

Furnishing

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—
	THE AMERICAN AGRICULTURAL CHEMICAL CO., NEW YORK, N. Y.	
143	12% Acid Phosphate,	McConnell & Walterson Co., Kittanning,
262		Ross Lutz, Lutzville,
276		Bruce Holderbaum, Bedford No. 2,
26	14% Acid Uhosphate,	A. G. Houtz, Myerstown, R. D. No. 1,
88		W. H. Stover, Millheim,
141		William Gates Estate, Kittanning,
882	W. S. Farmer & Co. Dissolved S. C. Phosphate.	Jeremiah Thomas, Bruceton Mills, W. Va.,
378	Great Eastern Dissolved Acid Phosphate,	Oliver Halteman, Bethlehem, R. D. No. 1,
172	Packers' Union Superior Acid Phosphate,	Charles Hartzel, Easton, R. D. No. 5,
	AMERICAN FERTILIZER CO., BALTIMORE, MD.	
446	American High Grade Acid Phosphate,	Ralph Gregory, Petersburg,
445	High Grade Acid Phosphate,	Ralph Gregory, Petersburg,
	ARMOUR FERTILIZER WORKS, INC., BALTIMORE, MD.	
718	Armour's Acid Phosphate 16%,	C. L. Shipman, Hughesville,
217	Armour's Star Phosphate 14%,	P. J. Cover & Son, Meyersdale,
	BALTIMORE FERTILIZER CO., BALTIMORE, MD.	
1	Honest Acid Phosphate 14%,	Diehl, Omwake & Diehl, Chambersburg,
2	Honest Acid Phosphate 16%,	Diehl, Omwake & Diehl, Chambersburg,
	BAUGH & SON CO., PHILADELPHIA, PA.	
4	Baugh's High Grade Acid Phosphate,	D. W. Foust & Sons, Chambersburg,
118		Charles Fritz, Quarryville,
268		Edgar Hartle, Osterburg, R. D.,
	BOWKER FERTILIZER COMPANY, NEW YORK, N. Y.	
245	Bowker's Soluble Phosphate,	John Seiber, Mifflintown,
523		Harvey L. Moses, Chester Springs,
570		A. Bolt, Great Bend,
	THE CENTRAL CHEMICAL CO., HAGERSTOWN, MD.	
7	C. C. C. Dissolved Phosphate 14%,	J. A. Witherspoon & Sons, Mercersburg,
861		G. R. Stahl, Somerset, R. D. No. 2,
	THE CHESAPEAKE CHEMICAL CO., BALTIMORE, MD.	
264	C. C. Co.'s Dissolved Pohsphate 16%,	Henry Brown, Loysburg,
	THE COE-MORTIMER CO., NEW YORK, N. Y.	
887	E. Frank Coe's Basic Fruit and Legume Phosphate.	King & Hoge Hardware Co., Waynesburg,
174	E. Frank Coe's High Grade Soluble Phosphate.	E. A. Berthalomew, Stroudsburg, R. D. No. 3.
	COLUMBIA GUANO COMPANY, BALTIMORE, MD.	
559	Columbia High Grade 16% Acid Phosphate phate.	E. J. Sipe, Rockwood, R. D.,
600		John A. Holman, Millerstown,
811		Howard Cox, Altoona, R. D.,
	THE CONSUMERS CHEMICAL CORPORATION, NEW YORK, N. Y.	
541	Consumer's Pure-Sure Acid Phosphate,	Jeff Altfather, Berlin,

PHOSPHATE FERTILIZERS.

Phosphoric Acid.

	PHOSPHORIC ACID							
	Total.		Available.		Insoluble.			
Moisture.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Selling price per ton at place of selection.	Chemist's number.
Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	$	
4.59	13.57	13.00	12.61	12.00	0.96	1.00	$21.00 21.00 19.00	143 262 276
4.78	15.58	15.00	14.94	14.00	0.64	1.00	.... 21.00	26 88 141
3.79	15.89	15.00	14.81	14.00	1.08	1.00	19.00	882
6.18	15.89	15.00	15.06	14.00	0.83	1.00	17.00	378
13.52	15.68	15.00	14.51	14.00	1.17	1.00	19.00	172
6.14	17.39	17.00	*15.73	16.00	1.66	1.00	19.00	446
7.03	16.47	15.00	15.35	14.00	1.12	1.00	18.00	445
4.45	18.29	16.50	17.24	16.00	1.05	0.50	20.00	718
9.69	15.33	14.50	14.82	14.00	0.51	0.50	25.20	217
6.80	15.00	15.00	14.82	14.00	0.18	1.00	16.00	1
10.99	16.63	17.00	16.50	16.00	0.13	1.00	17.00	2
4.92	17.45	....	16.75	14.00	0.70	....	17.35 18.50 19.50	4 118 268
4.25	15.23	15.00	14.27	14.00	0.96	1.00	18.00 21.00 20.00	245 523 570
4.96	14.39	....	13.94	14.00	0.45	....	16.00 16.60	7 861
9.53	17.16	17.00	17.07	16.00	0.09	1.00	18.50	264
1.22	15.03	14.00	13.95	13.00	1.08	1.00	28.00	887
12.24	15.27	15.00	13.88	14.00	1.39	1.00	18.50	174
4.39	17.53	16.50	17.02	16.00	0.51	0.50	18.20 16.00 20.00	559 600 811
4.22	16.49	15.00	15.47	14.00	1.02	1.00	18.00	541

*Deficient.

TABLE NO. IV.—ACIDULATED

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—
	JOSIAH COPE & CO., BALTIMORE, MD.	
437	Cope's Acidulated Phosphate,	R. C. Smith, Point,
562		H. L. Martz, Barronvale,
	THE JAMES G. DOWNWARD CO., COATESVILLE, PA.	
758	High Grade Acid Phosphate,	M. S. Bailey, Malvern,
	EASTERN CHEMICAL CO., NEW YORK, N. Y.	
6	Eastern Dissolved Phosphate 12%,	Diehl, Omwake & Diehl, Chambersburg,
846	Eastern Dissolved Phosphate 14%,	Diehl, Omwake & Diehl, Richmond Furnace,
5	Eastern Dissolved Phosphate 16%,	Diehl, Omwake & Diehl, Chambersburg,
159		Thompson & Glenn, Butler,
	EUREKA CHEMICAL CO., BALTIMORE, MD.	
339	Eureka Soluble Phosphate,	Ed. Urich, Myerstown,
777		R. W. Wickersham, Russellville,
	S. M. HESS & BRO., INC., PHILADELPHIA, PA.	
182	High Grade Acid Phosphate,	W. J. Newhart, Saylorsburg,
	M. P. HUBBARD Co., INC., BALTIMORE, MD.	
583	Hubbard's Dissolved Phosphate,	Equity Cooperative Exchange, Wellsboro,
	INTERNATIONAL AGRICULTURAL CORPORATION (BUFFALO FERTILIZER WORKS), BUFFALO, N. Y.	
234	Buffalo Sixteen Per Cent.,	D. H. Shivery, Bellefonte,
	KEYSTONE BONE FERTILIZER CO., PHILADELPHIA, PA.	
50	Keystone 14% Acid Phosphate,	Charles Schoffstall, Valley View,
398		H. F. Kistler, Wanamakers,
	THE LANCASTER CHEMICAL CO., LANCASTER, PA.	
413	No. 16 Phosphoric Acid Special,	C. Alvin Fogelsonger, Shippensburg,
	LISTERS AGRICULTURAL CHEM. WORKS, NEWARK, N. J.	
75	Listers Buyer's Choice Acid Phosphate,	Edward P. Houser, State College,
200		Isaac Plasterer, Lebanon,
441		Ben Everhart, Franklinville,
70	Lister's High Grade Acid Phosphate,	Edward P. Houser, State College,
208		J. M. Groh, Lickdale,
608		Hiram Grub, Duncannon, R. D. No. 4,
	MARTIN FERTILIZER CO., PHILADELPHIA, PA.	
299	Martin's 14% Acid Phosphate,	Harry Pyle & Son, Chadds Ford Junction,
300	Martin's Acid Phosphate 16%,	Harry Pyle & Son, Chadds Ford Junction,
	THE MILLER FERTILIZER CO., BALTIMORE, MD.	
86	Acid Phosphate 14%,	William Collier, Centre Hall,
328		F. T. Baker, Lewisburg,
493		D. B. Esh, Spruce Hill,
	NITRATE AGENCIES CO., NEW YORK, N. Y.	
645	High Grade Acid Phosphate 14%,	The I. W. Scott Co., Pittsburgh,
890	High Grade Acid Phosphate N. A. C. Brand.	J. H. Bell, Jefferson,
	G. OBER & SONS CO., BALTIMORE, MD.	
237	Ober's High Grade Acid Phosphate 16%,	D. W. Wagner Geiss, Bellefonte,
721		Myers Slonaker, Hughesville,

PHOSPHATE FERTILIZERS—Continued.

Moisture.	Phosphoric acid. Total. Found.	Phosphoric acid. Total. Guaranteed.	Phosphoric acid. Available. Found.	Phosphoric acid. Available. Guaranteed.	Phosphoric acid. Insoluble. Found.	Phosphoric acid. Insoluble. Guaranteed.	Selling price per ton at place of selection.	Chemist's number.
Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	$	
5.46	15.38	15.00	14.74	14.00	0.64	1.00	18.00 18.50	437 562
9.79	15.31	15.00	15.22	14.00	0.09	1.00	19.00	758
5.77	13.29	....	12.92	12.00	0.37	....	15.00	6
5.90	16.68	....	15.43	14.00	1.25	....	16.50	846
6.84	16.61	....	*15.55	16.00	1.06	....	16.00 22.00	5 159
7.51	14.58	14.50	14.45	14.00	0.13	0.50	.... 16.52	339 777
12.65	16.49	15.00	15.27	14.00	1.22	1.00	17.00	182
9.29	16.89	17.50	16.24	16.00	0.65	1.50	20.00	583
4.39	17.63	....	17.15	16.00	0.48	....	18.77	234
3.89	16.58	15.00	14.83	14.00	1.75	1.00	.... 18.00	50 398
8.67	16.58	17.00	*14.77	16.00	1.81	1.00	18.00	413
5.60	15.65	15.00	14.95	14.00	0.70	1.00	18.20 19.00 17.50	75 200 441
6.53	17.51	17.00	17.32	16.00	0.19	1.00	19.20 20.00	70 208 608
6.81	15.49	....	15.02	14.00	0.47	....	17.00	299
10.17	17.64	....	17.51	16.00	0.13	....	18.00	300
8.70	15.10	14.50	14.84	14.00	0.26	0.50	.... 19.00 17.50	86 328 493
8.81	15.80	15.00	15.23	14.00	0.57	1.00	20.00	645
8.59	18.57	17.00	17.80	16.00	0.77	1.00	21.00	890
7.80	18.09	17.00	17.52	16.00	0.57	1.00	18.56 20.50	237 721

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*Deficient.

TABLE NO. IV.—ACIDULATED

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—
	PATAPSCO GUANO CO., BALTIMORE, MD.	
326	Patapsco High Grade Acid Phosphate,	G. L. Schell, Vicksburg,
345		J. H. Lear, Carlisle, R. D. No. 5,
841		Briggs Brothers, Mt. Union,
	PIEDMONT MT. AIRY GUANO CO., BALMORE, MD.	
222	Piedmont 14% Acid Phosphate,	James Maust, Elk Lick, R. D. No. 1,
504	Piedmont 16% Acid Phosphate,	A. S. McKee, McVeytown,
	THE POLLOCK FERTILIZER CO., BALTIMORE, MD.	
74	Pollock's Dissolved S. C. Phosphate,	E. C. Ross, Lemont,
243		William B. McCahan, Mifflin, R. D.,
277		D. W. Dibert, Bedford No. 1,
	RASIN-MONUMENTAL CO., BALTIMORE, MD.	
45	Rasin's Acid Phosphate,	Elias S. Brubacher, Richland,
77		S. E. Wilber, Boalsburg,
822		Leonard Ritter, St. Marys,
69	Rasin's 16% Acid Phosphate,	Chester McCormick, State College,
103		J. D. Markle, Hanover,
728		H. A. Snyder, Strawberry Ridge,
	READING BONE FERTILIZER CO., READING, PA.	
155	Soluble Dissolved Phosphate,	Krause & Freehling, Marwood,
847		W. Secrist & Jas. Kendel, McConnellsburg,
	READING CHEMICAL CO., READING, PA.	
703	High Grade Acid Phosphate,	W. W. Parker, Rohrsburg, R. D. No. 1,
809		John Oaks, Brookville, R. D. No. 4,
279	Reading Clear Acid Phosphate,	Everett Hardware Co., Everett,
436		George Deaner, Schellsburg, R. D.,
	RED LION FARMERS CO-OPERATIVE ASSOCIATION, RED LION, PA.	
475	Red Lion Soluble Phosphate,	D. A. Miller, Red Lion,
	F. S. ROYSTER GUANO CO., BALTIMORE, MD.	
308	Royster's Special Buckwheat Fertilizer,	E. E. Renn & Son, Mansdale,
428		H. F. Gump & Son, Everett,
546		S. S. Mosholder, Rockwood, R. D.,
	SCHAAL-SHELDON FERTILIZER CO., ERIE, PA.	
480	Dissolved Phosphate,	C. F. Beck, Agt., York, R. D. No. 9,
	THE SCOTT FERTILIZER CO., ELKTON, MD.	
47	Scott's Tip Top Soluble Phosphate,	Elias S. Brubacher, Richland,
453		Nathan Bollinger, Little Gap,
	SWACK'S FERTILIZER WORKS, INC., DUBOIS, PA.	
598	Swack's Acid Phosphate 14%,	J. L. Erlenmeyer, Liverpool,
804		G. J. Refferty, Grampium,
	I. P. THOMAS & SON CO., PHILADELPHIA, PA.	
163	S. C. Phosphate,	George Hayden, Ackermanville,
216		A. O. Beal, Sand Patch,
343		McClellan Finn, Carlisle,
	J. E. TYGERT CO., PHILADELPHIA, PA.	
384	14% Acid Phosphate,	Robert S. Brown, Easton, R. D. No. 1,
700	16% Acid Phosphate,	A. J. Leisloft, Jerseytown, R. D. No. 1,

PHOSPHATE FERTILIZERS—Continued.

	PHOSPHORIC ACID.							
	Total.		Available.		Insoluble.			
Moisture.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Selling price per ton at place of selection.	Chemist's number.
Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	$	
6.53	17.42	17.00	17.10	16.00	0.32	1.00	19.00 17.50 21.00	326 345 841
12.24	15.45	....	15.23	14.00	0.22	....	18.00	222
12.15	16.48	....	16.29	16.00	0.19	....	21.50	504
5.32	15.45	15.00	14.94	14.00	0.51	1.00	17.50 20.00 19.00	74 243 277
4.25	16.40	15.00	15.70	14.00	0.70	1.00	17.84 18.50 20.00	45 77 822
5.50	17.90	17.00	16.43	16.00	1.47	1.00	19.00 18.00 18.00	69 103 728
3.00	15.65	15.00	*13.16	14.00	2.49	1.00	20.00 14.00	155 847
3.88	17.90	17.00	17.33	16.00	0.57	1.00	17.61 16.60	703 809
7.37	14.54	15.00	14.41	14.00	0.13	1.00	19.00 18.00	279 436
12.50	16.16	17.00	16.06	16.00	0.10	1.00	....	475
5.04	12.56	11.50	12.24	11.00	0.32	0.50	17.50 20.00 17.50	308 428 546
6.68	15.46	15.00	14.67	14.00	0.79	1.00	14.58	480
7.77	16.99	....	16.35	14.00	0.64	....	18.00	47 453
5.05	14.04	....	13.98	14.00	0.06	1.00	17.25 19.00	598 804
6.74	15.19	14.50	15.04	14.00	0.15	0.50	16.00 21.00	163 216 343
5.05	16.30	15.00	14.87	14.00	1.43	1.00	....	384
6.04	17.40	17.00	16.66	16.00	0.74	1.00	18.30	700

*Deficient.

TABLE NO. IV.--ACIDULATED

Chemist's number.	Name of Manufacturer and Brand.	Sample Taken From—
	VIRGINIA-CAROLINA CHEMICAL CO., RICHMOND, VA.	
270	V. C. C. Co.'s 14% Acid Phosphate,	J. E. Kniseley, Reynoldsville,
379		Lewis Graver, Easton, R. D. No. 1,
380	V. C. C. Co.'s 16% Acid Phosphate,	Lewis Graver, Easton, R. D. No. 1,
361	V. C. C. Co.'s Royal Acid Phosphate,	J. R. Weaver, New Oxford,
	THE ROBERT A. WOOLDRIDGE CO., BALTIMORE, MD.	
731	Wooldridge's Dissolved Soluble Phosphate,	H. V. Smith, Turbotsville, R. D. No. 1,
274	Wooldridge's High Grade Acid Phosphate,	Norman C. Miller, Cessner, R. D.,
365		M. W. Maul & H. H. Lauver, Thomasville,
495		I. K. Beaver, Academia,
	YORK CHEMICAL WORKS, YORK, PA.	
100	Dempwolf's Dissolved Phosphate,	M. J. Sheffer, Hanover,
810		McMeen Hardware Co., New Bethlehem,

PHOSPHATE FERTILIZERS—Concluded.

Moisture.	PHOSPHORIC ACID.						Selling price per ton at place of selection.	Chemist's number.
	Total.		Available.		Insoluble.			
	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.		
Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	$	
4.06	15.74	15.00	14.08	14.00	1.66	1.00	19.00	270
							15.00	379
4.69	17.77	17.00	16.10	16.00	1.67	1.00	15.00	380
2.29	12.78	11.00	11.50	10.00	1.28	1.00	15.00	361
4.34	12.04	11.00	10.96	10.00	1.08	1.00	16.50	731
							....	274
6.30	17.55	17.00	16.98	16.00	0.57	1.00	17.25	365
							19.00	459
8.20	15.61	14.50	15.55	14.00	0.06	0.50	17.50	100
							20.00	810

TABLE NO. V.—ROCK AND

Furnishing Phosphoric

Chemist's number.	Name of Manufacturer and Brand.	Sample taken from—	Moisture.
			Per ct.
	LEBANON FERTILIZER WORKS, LEBANON, PA.		
40	Levan's Grain Grower Fertilizer, ...	Joseph McCorkel, Hummelstown, ..	3.77
65		Horace Kinsey, Pine Grove, R. D.,	
	SWACK'S FERTILIZER WORKS, DU BOIS, PA.		
33	Swack's Lime Phosphate & Potash, ...	C. G. Shetron, Millersburg, ...	3.12
	SWIFT & COMPANY, INC., BALTIMORE, MD.		
358	Swift's Pure Special Phosphate & Potash,.	J. R. Weaver, New Oxford, ...	8.83
401		Wm. A. Nickles, Shippensburg, ...	
	VIRGINIA-CAROLINA CHEMICAL CO., RICHMOND, VA.		
233	V. C. C. Co.'s Dissolved Phosphate & Potash.	McCalmont & Co., Bellefonte, ...	6.28
434		John S. Hershberger, Everett, ...	
798	V. C. C. Co.'s Dissolved Phosphate & Potash Revised.	F. P. Waite & Co., Tyrone, ...	1.34

POTASH FERTILIZERS.

Acid and Potash.

PHOSPHORIC ACID.						POTASH.				Selling price per ton at place of selection.	Chemist's number.
Total.		Available.		Insoluble.							
Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.		
Per ct	Per ct	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	$	
10.74	10.00	9.66	9.00	1.08	1.00	1.16	1.00	0.54	0.62	...... 20.25	40 65
5.41	....	*3.55	4.00	1.86	0.50	*0.21	0.50	0.10	0.11	17.50	33
10.14	....	9.88	10.00	0.26	....	2.03	2.00	2.03	....	24.00 23.00	358 401
11.88	11.00	10.92	10.00	0.96	1.00	2.29	2.00	1.74	0.55	...... 25.00	333 434
11.97	11.00	10.57	10.00	1.40	1.00	1.66	1.00	1.08	0.58	20.00	798

*Deficient.

TABLE NO. VI.—MISCELL

Chemist's number.	Name of Manufacturer and Brand.	Sample taken from—
	THE BERG COMPANY, PHILADELPHIA, PA.	
652	Berg's Animal Bone & Meat,	Wm. M. Holbert, Warrington.
	THE COE-MORTIMER CO., NEW YORK, N. Y.	
647	Nitrate of Soda,	The I. W. Scott Co., Pittsburgh,
	FEDERAL CHEMICAL CO., COLUMBIA, TENN.	
648	Daybreak Tenn. Brown Phosphate Rock,	The I. W. Scott Co., Pittsburgh,
	MARTINS FERTILIZER CO., PHILADELPHIA, PA.	
746	Martins 8% Tankage,	J. C. Leib & Co., Stewartstown.
	NITRATE AGENCIES CO., NEW YORK, N. Y.	
531	Ground Tankage, 7-15%,	A. M. F. Stiteler, Uwchland,
375	High Grade Ground Fish,	H. N. Forry, Mt. Wolf,
	RED LION FARMERS' COOPERATIVE ASSOCIATION, RED LION, PA.	
741	Red Lion Ground Tankage,	D. A. Miller, Agt., Red Lion,
742	Red Lion Nitrate of Soda,	D. A. Miller, Agt., Red Lion,
	REICHARD HIDE & TALLOW CO., ASHLAND, PA.	
468	Tankage,	Lakeside Grange, John Kunkle, Secy., Mahanoy City, R. D.
	SWIFT & CO., INC., BALTIMORE, MD.	
719	Swift's Pure Blood & Tankage Mixture,	C. L. Shipman, Hughesville,
	YORK CHEMICAL WORKS, YORK, PA.	
478	Dempwolf's High Grade Tankage,	Dover Cooperative Association, Dover,
477	Nitrate of Soda,	Dover Cooperative Association, Dover,

a=3/5 or more, b=2/5 to 3/5, c=2/5 or less of active insoluble nitrogen.

ANEOUS FERTILIZERS.

	NITROGEN.						PHOSPHORIC ACID.			
	Total.				Insoluble.		Total.			
Moisture.	Found.	Guaranteed.	Available.	Water soluble.	Active.	Inactive.	Found.	Guaranteed.	Selling price per ton at place of selection.	Chemist's number.
Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	$	
4.78	3.32	3.30	2.47	0.85	a-1.62	0.85	18.70	17.00	35.00	652
0.90	16.24	15.00	....	....	....	....	....	....	80.00	647
1.56	....	....	....	....	....	....	*28.02	29.75	12.50	648
5.78	6.62	6.58	5.26	2.51	a-2.75	1.36	12.81	....	36.00	746
5.71	6.29	5.75	4.83	3.13	b-1.70	1.46	9.85	6.86	17.50	531
5.90	7.88	7.81	5.67	0.67	a-5.00	2.21	5.50	5.49	....	375
8.75	8.01	7.38	5.70	2.20	a-3.50	2.31	0.11	....	32.85	741
0.49	16.40	15.38	....	....	....	....	....	....	69.90	742
5.60	6.62	6.58	4.49	1.14	a-3.35	2.13	11.15	9.15	29.00	468
2.69	1.10	0.82	0.89	0.45	a-0.44	0.21	21.19	20.00	30.00	719
6.70	6.39	6.58	4.70	1.17	a-3.53	1.69	10.19	10.00	37.00	478
0.23	16.16	15.00	....	....	....	....	....	....	69.00	477

*Deficient.